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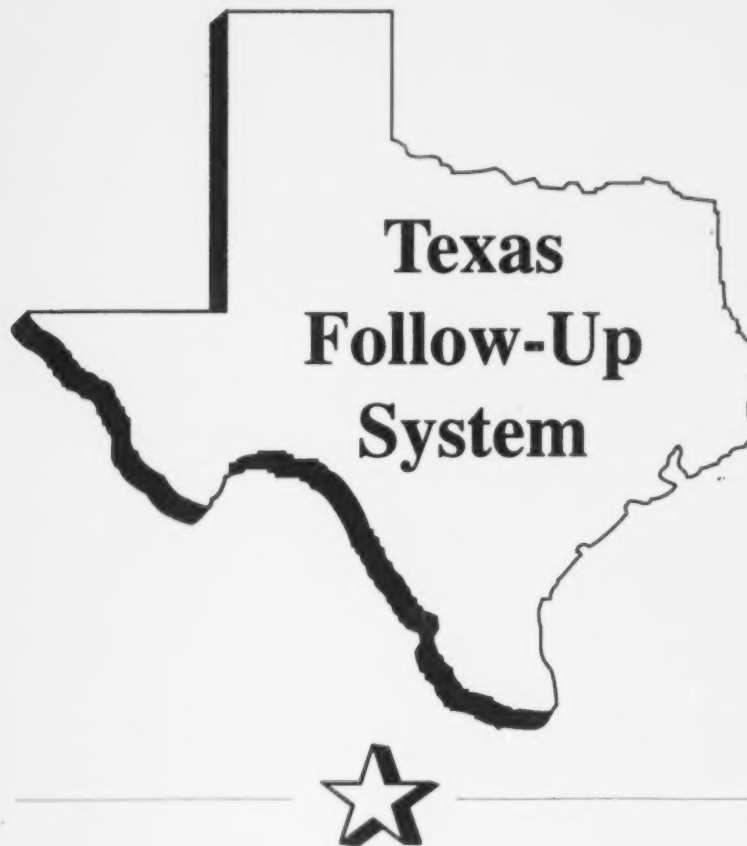
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ABSTRACT

The chief accomplishment of the Texas Automated Follow-Up System in program year 1994-95 was a major expansion of services to secondary education. Data were collected on the results achieved by former seniors who exited high schools in 25 volunteer districts. Because the pilot districts were not necessarily representative of all school districts in the state, the study provided evidence only that automated record linkage techniques were a cost-effective method for gathering information about former students' post-exit achievement. Data analysis did indicate that the labor market offered little hope for high wage employment for former students with only a high school diploma and that there were exceptions. Follow-up was conducted on the entire 1993-94 exit cohort from community and technical colleges, a first-wave employer follow-up on the entire 1992-93 exiting cohort of former community and technical college students, and a second-wave longitudinal study of the entire 1991-92 exit cohort of former community and technical college students. Findings indicated that the training relatedness of employment among community and technical college leavers was an important factor in decreasing the traditional earnings gaps between men and women and former students were likely to experience occupational volatility during the 2 years after leaving a community or technical college. (Appendixes include sample publicity and school district outreach materials, file layouts and data specifications, and 30 endnotes.) (YLB)

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*Automated Student and Adult Learner
Follow-Up Study*

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November 1995

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AUTOMATED STUDENT AND ADULT LEARNER
FOLLOW-UP SYSTEM

Final Report
for
Program Year 1994-1995

submitted to

Texas Higher Education Coordinating Board
acting as fiscal agent for
The Tri-Agencies for Quality Work Force Planning

in partial fulfillment of
Special Projects Grant #55100005

by

Texas State Occupational Information Coordinating Committee
Richard Froeschle, Executive Director
Marc Anderberg, Follow-Up Director

November 20, 1995

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Dr. Jim F. Reed, president of the Texas Student Information System (TEXSIS), was awarded the sub-contract to conduct the employer follow-up survey. His services pre-date the SOICC's involvement in follow-up; his expertise and experience have helped shape the Automated Follow-Up System from its inception. The Perkins Committee of Postsecondary Practitioners and an *ad hoc* group of follow-up data users, both chaired by Dr. John Grable (President of Brazosport College), and the LoneStar Consortium (notably Drs. Stan Adelman, Mike Green, David Preston, and Richard Bailey) have also been instrumental in shaping this system. Dr. Adelman of Amarillo College along with John Syer of the Region IV Education Service Center (Houston) must be singled out for their work in developing software for the analysis of secondary education outcomes. Our gratitude, too, goes to the liaison from the school districts (listed in Appendix A) who volunteered to serve as pilots: thank you for your patience as we experimented with the delivery of services to secondary education. Buford Neal (Fort Worth ISD) and Dr. Larry Kohler (McAllen ISD) deserve special mention for their extra efforts.

As attempts were made to connect the Texas Automated Follow-Up System to other national initiatives, key persons provided invaluable assistance: Dr. David Stevens, University of Baltimore; Tom Lynch, Oregon Employment Department; Robert Cottrell, North Carolina Employment Security Agency; and staff members of the U.S. Department of Labor's Employment and Training Administration (DoL/ETA) including Jim Vollman and Vicky Galifaro of the national office as well as David Lipnicky and Ann Cole in Dallas regional office. While handing out acknowledgements, we must express our gratitude to Jay Pfeiffer and Duane Whitfield of the Florida Education and Training Placement Information Program (FETPIP), pioneers in the field of automated follow-up, who continue to give us freely and tirelessly the benefits of their expertise and experience.

We would like to pause to pay tribute to several individuals who, after contributing significantly to the Automated Follow-Up System, have moved on to tackle other important assignments: Dr. John Grable whose term as chair of the Perkins Committee of Postsecondary Practitioners expired; Ms. Lorraine Merrick who retired as Senior Director of Career and Technology Education at TEA and Leonard Thielen who retired as the Vocational Education Director for McAllen ISD; Dr. Mike Wolf of the Practitioners Committee who has moved from El Paso Community College to New Mexico State University; Ms. Barbara Cigainero who moved from the Texas Council on Workforce and Economic Development to the TEC; Dr. Mark Butler who has moved from TEA to the Coordinating Board; Helen Giraitis who is leaving the Coordinating Board to pursue her graduate studies; and to Terry Ramsey and Ruben Garcia who are leaving the TDoC and Coordinating Board respectively. With the exception of Ms. Ramsey and Mr. Garcia (who will be joining the SOICC staff), and Barbara Cigainero and Dr. Butler (who will continue their association with the SOICC in their new capacities), the assistance of these folks will be sorely missed.

EXECUTIVE SUMMARY

In Program Year 1994-1995, the Texas State Occupational Information Coordinating Committee operated the Automated Student and Adult Learner Follow-Up System under a grant of Carl Perkins federal dollars from the Texas Higher Education Coordinating Board and the Texas Education Agency. In prior years, the Texas Department of Commerce contributed JTPA funds as part of a tri-agency effort to establish the Automated Follow-Up System. Although a decrease in discretionary funds prevented it from making a financial contribution, the Texas Department of Commerce continued to participate in the system development and oversight. The Texas Higher Education Coordinating Board had lead responsibility for managing subgrant activities.

The chief accomplishment of the Automated Follow-Up System in Program Year 1994-1995 was a major expansion of services to secondary education. Data were collected on the results achieved by former seniors who exited high schools in twenty-five volunteer districts. Because the pilot districts are not necessarily representative of all school districts in the state, this Program Year's study can only provide evidence that automated record linkage techniques are a cost-effective method for gathering information about former students' post-exit achievement. Analysis of those achievements can suggest hypotheses worthy of being tested in the subsequent program year when follow-up will be expanded to serve all school districts in Texas.

Two key observations can be made after analysis of data from the pilot school districts. First, the labor market offers little hope for high wage employment for former students with no more than a high school diploma. Secondly, there may be exceptions to this general observation. Some secondary education and training programs may succeed in preparing students for placement in high wage jobs immediately after high school. However, until the coding structure used by the Texas Education Agency is changed to permit program-level analysis the follow-up system will be able to report former students' achievements aggregated by the Vocational Indicator code in PEIMS. Aggregated at that level, results from even the most outstanding secondary programs targeted to viable niche labor market opportunities get lost amidst the predominance of low-wage, part-time employment among former students shortly after they exit high school. The follow-up system probably will not be able to document the full benefits of secondary education until coding structures allow us to identify those programs which result in immediate high wage placements and longitudinal studies are conducted to identify the more long term benefits realized by students whose high school experiences prepared them to succeed at the next level of education and training.

Special care should be exercised in interpreting data on secondary Tech Prep completers reported in this study. The data are from a non-representative group of volunteer districts and cannot be differentiated by program. Moreover, 1993-1994 was the first School Year when most districts had approved Tech Prep programs in place. In theory, Tech Prep programs should start in middle school/junior high and should offer students a coherent sequence of courses throughout their secondary education. Since the cohort followed in this study consisted of members of the 1993-1994 senior class, none of the subjects could have taken full advantage of secondary Tech Prep offerings. School districts were allowed to code such students as Tech Prep completers though there is good reason to suspect that their education and training was not substantially different than the education and training provided to students coded as coherent sequence completers. Not until the senior class of 1996-1997 exits will the vocational indicator code genuinely signify that subjects had received the full benefits of a Tech Prep education at the secondary level. Until that time, we are hesitant to draw any conclusions about or compare the results achieved by Tech Prep students to those achieved by other kinds of students.

We do not encounter the same problems in our analysis of the results achieved by completers and leavers from Texas public community and technical colleges. In this Program Year, we conducted follow-up on the entire 1993-1994 exit cohort, a first wave employer follow-up study on the entire 1992-1993 exiting cohort of former community and technical college students, and a second wave longitudinal study of the entire 1991-1992 exit cohort of former community and technical college students.

The first noteworthy finding is that the training-relatedness of employment among community and technical college exiters is an important factor in decreasing the traditional earnings gaps between men and women. The traditional earnings gaps between Whites (non-Hispanic) and Blacks (non-Hispanic) also decreased among those employed in jobs related to their postsecondary training. However, the traditional earnings gap compared to Whites (non-Hispanic) for Hispanics employed in training-related occupations increased. Additional data should be collected from employers to determine why earnings for Hispanic completers and leavers did not conform to the general pattern.

The second noteworthy find is that former students are likely to experience occupational volatility during their first two years after exiting a community or technical college: the majority of former community and technical college students located in the labor market at the first and second wave of longitudinal study were employed in the same region; less than half were found to be employed in the same occupation with the same firm during both snapshot periods. Although these observations are true for all types of former community and technical college students, we did find that former Academic students are more likely to change occupations but remain with the same firm while former Technical students are slightly more likely to change employers but remain in the same occupational field.

SERVICES TO PUBLIC SECONDARY EDUCATION

Public Outreach

Services to public secondary education were significantly increased in Program Year 1994-1995. In the first year operating the Automated Follow-Up System, the Texas SOICC provided record matching services to a single volunteer school district, Leander ISD. In PY 1993-1994 Leander continued its pilot participation in the system and seven other volunteer districts were served. They were Aldine, Amarillo, Beaumont, Hereford, McAllen, Silsbee, and Waco. In that year, John P. Syer from Region IV office (Houston) volunteered his services as a consultant on the role Education Service Centers could play in assisting with the analysis of results achieved by public education. Eileen Booher of the Gulf Coast, Ray Brown of Southeast Texas, Dr. Carrie Nelson of Deep East Texas, and Dr. Micah Dial (program evaluation sub-contractor) rendered advice on the role of the Tech Prep consortia. Deborah Pickering of the Panhandle Area Alliance and Don Travis of Southeast Texas served as liaison for regional Quality Work Force Planning committees. The number of volunteer districts served in PY 1994-1995 increased to 26 while Mr. Syer, Ms. Booher, Mr. Brown, Dr. Nelson, Dr. Dial, Mr. Travis, and Ms. Pickering continued in contributing roles. (The districts and their Follow-Up liaison and other key public education participants are listed in Appendix A.)

Dr. Jay Cummings, speaking on behalf of Commissioner Lionel Meno, sought assurances from the grant management team that the expansion of follow-up services to public education would be understood and supported by Texas stakeholders such as parental and community-based organizations. A series of public meetings were held to explain the Follow-Up System and to cultivate wide spread acceptance of the Texas SOICC's efforts to facilitate continuous program improvement and accountability for results achieved by the state's education and training system. The Follow-Up Director worked with Lorraine Merrick (Senior Director for Career and Technology Education) and Dr. Mark Butler (Quality Work Force Planning Director) to schedule meetings across the state. Notices of the public meetings were posted in the *Texas Register* as well as in the newspapers having the largest circulation in each of the host cities. (A sample copy of the Public Meeting Notice is provided in Appendix B.) From records on file in his office, Albert Black (the Texas Education Agency's liaison to parental and community based organizations) supplied contact names for key stakeholders in host cities. Special efforts were made to assure that direct mail invitations were sent to community-based organizations representing economically disadvantaged and/or racial and ethnic minorities. In addition, follow-up liaison with the independent school districts, Quality Work Force Planning Committees, and Tech Prep consortia in host cities were asked to supply names and contact information on persons they believed to be key stakeholders. Notices of public meetings in the *Texas Register* and in the local newspapers were supplemented with direct mail invitations to the stakeholders identified through this process. (Appendix C contains a sample direct mail invitation to one of those public meetings.) To stimulate interest, the newspapers of largest circulation were provided copy they could use in their Community Affairs sections the week prior to the public meeting hosted in their cities.

With the assistance of the graphics design team at the Texas Employment Commission's Print Shop, the Follow-Up Director developed a tri-fold brochure to explain the principles, processes, and uses of outcomes data in the Follow-Up System. Tri-fold brochures were enclosed in all mailed invitations and as attachments to copy submitted to host-city newspapers. Multiple copies of the tri-folds were sent to local follow-up liaison for posting, circulation, and secondary dissemination along with suggested copy for posters announcing the public meetings scheduled for their cities. (Appendix D contains the text of materials in the tri-fold brochures.)

Public Meeting Schedule

HOST CITY	LOCATION	DATE
Laredo	Laredo Community College	November 3, 1994
El Paso	Ysleta ISD Administration Building	November 22, 1994
San Antonio/Converse	Judson ISD Administration Building	November 30, 1994
McAllen	McAllen High School	December 1, 1994
Houston	Region IV Education Service Center	December 15, 1994
Amarillo	Amarillo Public Library	December 19, 1994

No representatives of parental or community-based organizations attended any of the scheduled meetings. No individuals requested an opportunity to speak during the announced public comment periods. All those who did attend the scheduled meetings represented educational institutions that would be affected by statewide implementation of automated follow-up. The vast majority in attendance were already familiar with its purpose and methodology. They wanted instead to know more about the uses they could make of the data returned by the follow-up system to their individual institutions. At each meeting the planned agenda for explaining the basics of follow-up and for obtaining parental or community leaders' input was suspended by unanimous consent. Time was devoted instead to technical assistance to educators on data analysis and the cyclical model of data-driven planning and evaluation for continuous program improvement.

Because parents and community leaders did not attend any of the first six scheduled meetings despite costly advertising and direct mail invitations, additional tentatively planned public meetings were canceled. The areas affected by the cancellations were: Fort Worth/Arlington/Plano/Waxahchie; Tyler/Rusk; Conroe/Bryan; Abilene/Brownwood/Big Spring; and Beaumont/Silsbee.

It would be inappropriate to conclude from the lack of attendance at the public meetings by representatives of parental and community-based organizations that the expansion of follow-up services to public education is universally approved. It could be the case that the related issues were of such low salience or controversy that meeting announcements did not generate enough interest to overshadow other events and activities such as the mid-term elections, Texas high school football championship play-offs, or the approaching Christmas holiday shopping season. Nonetheless, the absence of *vocal* public opposition gave key officials at the TEA the assurances they needed in order to proceed with plans for statewide implementation in the 1995-1996 program year.

Data Quality Control

Dollars remaining in the budget line to fund public meetings and related travel expenses were used instead to pay for the expense of conducting a substitute outreach effort. A decision was made in collaboration with the TEA to remind key independent school district personnel about the importance of data quality control. A letter was drafted by the SOICC for distribution by TEA to all school district superintendents informing them about plans for statewide implementation of automated follow-up services for secondary education beginning July 1, 1995. (A copy of that draft letter is attached as Appendix E.1.) The letter emphasized three points:

- 1) Social Security numbers are the common element by which student records are linked to administrative data bases and therefore are critical to achieving an acceptable "*hit rate*" in automated follow-up;
- 2) Students and their parents have a right to know that data will be collected and organized by Social Security numbers for the purpose of conducting follow-up studies;
- 3) Students and their parents should be assured that data privacy and confidentiality will be protected by prohibitions against the release of individually identifiable information.

A second step was taken for additional emphasis. The Public Education Information Management System (PEIMS) staff at the TEA provided the SOICC with a printout listing by school district the percentage of students having a Social Security number on file. The report indicated that on average school districts had Social Security numbers on file for 87.5% of their students. However, the range among school districts was wide with several districts having Social Security numbers on file in PEIMS for nearly 100% of their students while others had that data on file for as few as 40% of their students. A second letter was drafted by the SOICC for issuance by TEA to the superintendents of school districts in the bottom quartile as identified on the PEIMS Social Security number filing report. (A copy of that draft letter is attached as Appendix E.2.) That letter urged superintendents to have appropriate district personnel make a concerted effort to obtain missing Social Security numbers and to verify those already on file.

Technical Assistance to Help Public Education Make Use of Follow-Up Information

While informing school district officials about plans for statewide implementation of automated follow-up, the SOICC worked with liaison from volunteer pilot districts to improve services to public education. The *Final Report* on the Automated Student and Adult Learner Follow-Up Study for 1993-1994 listed attributes of a fully mature system in terms of breadth of coverage, degree of automation, depth of coverage, tool development, and utilization.¹ In improving services to public education, progress toward the ideal model was not expected to occur at the same pace on all the dimensions listed. For example, while breadth of coverage improved with expansion from eight to twenty-five pilot districts, no longitudinal studies were planned in Program Year 1994-95 to improve the depth of coverage on behalf of public education. In building toward statewide implementation for public education by July 1, 1995, the Follow-Up Director, state agency, and district liaison were concerned primarily with increasing practitioner support. It was decided that the best strategy for building practitioner support was to concentrate on increasing the usefulness of follow-up information.

Integral to that strategy was a collective decision to emphasize the use of follow-up data to inform local decision-makers as they engaged in a cyclical process of planning and evaluation for continuous program improvement. The corollary to that basic strategy was to reduce emphasis on the role of follow-up in compliance reporting. It was believed that relative emphasis on continuous program improvement would enhance system maturation by putting more resources into developing tools which would make follow-up information easier to understand by school district administrators, teachers, career-guidance counselors, students, parents, and concerned citizens. By making the information more user-friendly, we can increase the probability that stakeholders in public education would actually use follow-up data to improve programs.

To accentuate the use of follow-up information in program improvement and to free resources for tool development, Lorraine Merrick (Senior Director of Career and Technology Education, TEA) issued a letter to superintendents in the volunteer districts on November 2, 1994, waving their obligation to submit the VOC-116 Reports (due from all other districts in the spring of 1995). Relieved of that compliance reporting obligation for at least the current program year, pilot district liaison could experiment with various analyses of follow-up data and, by trial and error, develop some consensus on data reporting and display formats that might prove most useful.

The Follow-Up Director began to draft design specifications for automation tools that would extract data from follow-up files and display that information in ways that would engage the interest of stakeholders. It was assumed that there would be a variety of cognitive styles among stakeholders but few would have formal training in statistics, econometrics, or research methods. Therefore, the design and development effort was to include narrative, tabular and graphical display formats designed for easy comprehension by laypersons.

The preliminary conceptual development work on user-friendly reporting received national attention and led to a major grant. The United States Department of Labor's Employment and Training Administration (ETA) commissioned the SOICC to extend development of an automated information delivery system (known as the Consumer Reports System) for installation in Career Centers in as many as sixteen states scheduled to receive *One-Stop* implementation grants.

Work on the Consumer Report System (CRS) for public education in Texas, however, was brought to a halt temporarily. On March 31, 1995, prompted by an inquiry from Charles Barry (liaison from Ysleta ISD) regarding the relationship of the district's annual performance report and its annual application for federal vocational education funding, TEA withdrew the waiver that exempted pilot districts from filing their VOC-116 Reports. Notice that the waiver was withdrawn was received long after the time of year when school districts commonly conduct their traditional follow-up surveys. The sudden reversal came at a time when district staff were committed to vocational student competitions and other end-of-school-year activities. Because most pilot districts, relying in good faith on the waiver issued by TEA, had not conducted their own follow-up, the reversal also meant that information for the VOC-116 Reports would have to be collected and compiled within a severely shortened timeframe.

The reversal brought a prompt halt in the design and development of automation tools and forced a shift in the allocation of resources to assist pilot districts in meeting their compliance reporting obligations. Hank Madeley, who became Acting Senior Director of Career and Technology Education when Ms. Merrick retired from TEA, was made aware of the difficult burden the reversal of the waiver decision placed on the pilot districts. On behalf of the pilot districts, the Follow-Up Director and Mr. Madeley sought some relief through the office of the Deputy Commissioner, Dr. Jay Cummings. Relief was provided in two forms:

- 1) the deadline for submission of the VOC-116 Reports by the pilot districts was extended to July 15, 1995; and
- 2) the pilot districts were required to report only on those elements in the VOC-116 for which the automated follow-up system could deliver data. (All other items could be reported on the VOC-116 as "missing".)

The purpose of the VOC-116 is to document program by program the successes achieved by vocational training completers. While in-district files may indicate what program each of its vocational students completed, information about program completion can not be extracted easily from the data submitted by each district to the Public Education Information Management System (PEIMS). This short-coming in public education's data system is the prime factor that led the SOICC to concentrate on developing tools to enhance the utilization of follow-up data for continuous program improvement rather than for compliance reporting.

The chief problem in serving public education lies in the disparity between the legislatively mandated mission of the Automated Follow-Up System (as well as the way the VOC-116 is structured) and the way course offerings in secondary education are coded by TEA and the school districts. Whereas the Texas Workforce and Economic Competitiveness Act (Senate Bill 642, 1993) calls for *program* level analysis of education and training provider performance (as does the VOC-116), the coding system used in Texas public education is not structured hierarchically to permit easy truncation or collapsing of codes for coherent sequences of related courses into a common *program* level code. (By comparison, the Classification of Instructional Programs (CIP) coding taxonomy used by higher education and the JTPA Management Information System in Texas and by most education and training providers across the nation is structured more logically. A simple review of the Table of Contents for the CIP manual will clearly show its inherent logic. Coding under "MARKETING OPERATIONS" serves as an excellent illustration.²

08. MARKETING OPERATIONS/MARKETING AND DISTRIBUTION

08.01 Apparel and Accessories Marketing Operations

- 08.0101 Apparel and Accessories Marketing Operations, General
- 08.0102 Fashion Merchandising
- 08.0103 Fashion Modeling
- 08.0199 Apparel and Accessories Marketing Operations, Other

* * *

08.09 Hospitality and Recreation Marketing Operations

- 08.0901 Hospitality and Recreation Marketing Operations, General
- 08.0902 Hotel/Motel Services Marketing Operations
- 08.0903 Recreation Products/Services Marketing Operations
- 08.0906 Food Sales Operations
- 08.0999 Hospitality and Recreation Marketing Operations, Other

As the editors explain, CIP codes are organized according to specific conventions.

Standard formats are used in each Chapter to indicate the type of information conveyed by an entry. These formats refer to Series organization [and] active instructional program descriptions. . .

Two-Digit Series. Every CIP entry is aggregated into a specific 2-digit Series. . . Every 2-digit descriptive text begins with the standard phrase "A summary of groups of instructional programs. . ."

Four-Digit Series. *Within 2-digit Series there is an intermediate aggregation known as a 4-digit Series. There is at least one 4-digit Series within each 2-digit Series, and the function of the 4-digit Series is to group together related 6-digit codes. . . Every 4-digit descriptive text begins with the standard phrase "A group of instructional programs. . ."*

Six-Digit Codes. *Every 6-digit code corresponds to a single instructional program.*³

In addition, specific conventions are used in the CIP system to indicate where programs under multiple titles were judged "similar enough to be combined for data purposes" or where "two or more interchangeable" program titles are in common use. Educational institutions and administrative agencies that use the CIP system are at liberty to add digits to the right of the 6-digit instructional program code to identify such things as grade-level of instructional delivery and specific courses addressing subject matter. Continuing to move from left to right, additional digits may serve to distinguish among multiple sections of course offerings. In working with codes used by the Texas Education Agency's Public Education Information Management System, we found that truncation by dropping trailing digits from right to left did **not** result in program level aggregations. For example, the following course codes all deliver subject matter related to Apparel and Accessories Marketing Operations: 12620148 (Clerk/ Attendant: Apparel and Accessories); 11612600 Home Economics Cooperative Training); and 11650750 (Apparel and Accessories Marketing). Whether collapsed to the 2-digit level or 4-digit level, these three TEA course codes do not indicate that the subject matter contained therein could fit under a single program. Under the CIP coding logic, all three courses would be renumbered to share common identifiers at least at the 4-digit level.

The SOICC has negotiated an interagency agreement with the TEA to study and make recommendations for improving the way secondary course offerings are coded and reported to PEIMS. However, the study will not commence until the Program Year beginning July 1, 1995 with recommendations due by June 30, 1996. The State Board of Education acting through the Commissioner of Education will have the right to accept or reject all such recommendations. It is anticipated that the PEIMS Division of TEA could take anywhere from one to three years to implement any recommendations from the study assuming that they are accepted by the State Board and the Commissioner. Meanwhile, existing course coding and reporting processes will continue to make it difficult for the Automated Follow-Up System to help school districts compile their VOC-116 Reports.

PEIMS files do contain a flag to indicate which students have completed either a coherent sequence of vocational courses or the secondary education component of an approved articulated Tech Prep program. However, from that flag in PEIMS it is impossible to tell what specific coherent sequence or Tech Prep components was completed. Each coherent sequence or Tech Prep component, in theory, is to conclude with an occupationally-specific capstone experience. For students who complete that occupationally-specific capstone experience in their last semester of their senior year, it is relatively easy to determine the nature of the program completed.

The problem is compounded, however, by several factors:

- 1) Districts are allowed to define the mix of courses comprising a coherent sequence or (with TEA approval) a unique mix of courses in its delivery of the secondary education portion of a Tech Prep articulated program. The mix of courses under any given informal programmatic title may vary from district to district. Therefore, there is no standard set of course codes nor a field in PEIMS to distinguish a capstone experience from other occupationally-specific courses completed by a student. (Capstone experiences, for example, are not assigned a higher number than other courses in the TEA coding system for occupationally-specific courses.)
- 2) Secondary students are allowed to take more than one occupationally-specific course. For avocational or personal growth reasons, some students take one or more occupationally-specific courses outside those prescribed in their individual education plans as part of a coherent sequence. (For example, a student enrolled in a coherent sequence of courses in Marketing Operations might also take a course in auto body repair as a hobby interest.) Each occupationally-specific course completed is reported to PEIMS by the district on the 170 Report with no differentiation between those that are part of a coherent sequence from those taken for avocational or personal growth reasons.
- 3) It is possible for students to complete a coherent sequence or the secondary education component of a Tech Prep articulated program before the last semester of their senior years. If, after completing a coherent sequence or Tech Prep component, a student takes one or more additional occupationally-specific courses, the last course code reported to PEIMS by the district in its 170 Report often is not be the student's capstone experience.

These factors made it impossible to establish a logical decision necessary for automating the extraction of the unique single occupationally-specific course code under which a district should have reported an individual vocation program completer's outcomes on the VOC-116. Capstone experience course numbers had no distinctive configuration or algorithm. Nor did attempted decision rules (e.g., "most recently submitted course number on the 170 Report" or "highest course number submitted on the 170 Report") result in entirely successful extraction of the course codes under which the pilot districts were to report student outcomes. Nonetheless, most pilot districts found that the "*bit ratio*" obtained through automated follow-up was much greater than that obtained in previous years through traditional survey techniques. While acknowledging there was much room for improvement in the automating of public education's compliance reporting process, Follow-Up System liaison accepted the data analysis provided by the SOICC and generated their VOC-116 Reports by the extended deadline.

Two exceptions must be noted because they clearly illustrate the problems inherent in the current public education course coding system in relation to the central state agency's compliance reporting expectations. First, Buford Neal (follow-up liaison from Fort Worth) discovered that the decision rule selecting the highest course number submitted for a student on the 170 Report led to a gross over-representation of office administration and secretarial science courses taken for avocational or personal growth reasons while the decision rule to select only the occupationally-specific course code reported for the last semester of the students' senior year missed more than 80% of the students whose outcomes should have been reported on the district's VOC-116 Report. In the absence of a uniform decision rule for identifying students to be reported on Fort Worth's VOC-116 Report, the SOICC was forced to request multiple data runs from PEIMS. As the result of multiple data runs, Fort Worth was provided up to four occupationally specific course codes per student. Mr. Neal then did a frequency distribution by course number and selected the data run which most closely matched his estimates of the number of students to be included on Fort Worth's VOC-116. (Although there is no reason to believe the same logic would work for other districts, the decision rule that selected the next-to-last submitted occupationally-specific course number provided the best fit for Fort Worth's VOC-116 Report.)

For Abilene ISD, a problem in the transmission of the 170 Reports from the district or in the storage of those reports in PEIMS resulted in no occupationally-specific course codes extracted for its students (although coherent sequence and Tech Prep students were appropriately flagged). Vocational administrators at Abilene ISD were forced to reconstruct by hand all course codes for students to be reported on the district's VOC-116 Report.

While too late to help Fort Worth or Abilene cure these data problems, the SOICC did develop instructions to automatically append course identifiers from in-district records to the student records in the automated follow-up files. The instructions assume that district personnel have access to and expertise in FoxPro or other data base management software derived from Aston-Tate's dBASE. (A copy of these instructions are available upon request from the Automated Follow-Up Director at the SOICC.)

The inescapable conclusion is that automating school district's VOC-116 compliance reporting can not be perfected until:

- a) at least vocational and Tech Prep courses are coded under a hierarchical classification system such as the CIP;
- b) a separate data element is added to the PEIMS file layout to hold a code denoting *program or career major* for coherent sequence completers; and or
- c) some indicator is included on the 170 report to differentiate a student's capstone experience from all other occupationally-specific courses he/she has completed.

Of the options listed on the previous page, the SOICC strongly recommends the first. Adoption of the CIP coding system has the following advantages:

- The CIP was used at one time by public education in Texas; therefore it is not totally unfamiliar to most instructional and administrative staff at both the state and district level.
- When reporting the outcomes achieved by vocational program completers to federal agencies, the central state agency translates TEA-coded data into CIP equivalents.
- Other education and training partners in Texas (e.g., higher education and the JTPA system) use the CIP system. Stakeholders' capacity to track the articulation of secondary program completers into higher education and second-chance opportunity training programs would be greatly enhanced if all partners use the same system for coding the delivery of education and training.
- Adoption of the CIP coding system would eliminate the need for TEA code-to-CIP code crosswalks that require a labor intensive effort to maintain.

Problems in compiling follow-up data for two specific reporting items requested on the VOC-116 further illustrate the need for adoption of the CIP coding system by public education in Texas. First, the VOC-116 requires the district to differentiate completers employed in training-related fields from those employed at jobs not related to their training; secondly, the VOC-116 requires the district to differentiate those pursuing higher education and training in a related field from those pursuing higher education in a field unrelated to the coherent sequence completed in high school.

Assume that the problem in identifying the occupational field of study completed by a secondary student is solved by either flagging one and only one TEA-coded course on any given student's 170 report or by adding a non-CIP-based data element in PEIMS to identify the program completed. It would, nonetheless, remain difficult (if not impossible) to differentiate training-related job placements from non-related placements because the principle tool used for making training-relatedness determinations is the CIP-to-OES crosswalk.⁴ Applying the training-relatedness criteria to continued pursuit of education and training outcomes could be done but would require the cumbersome intermediate step of filtering secondary education data through an imperfect TEA code-to-CIP code crosswalk.

Additional problems should be noted regarding the SOICC's efforts to automate the pilot districts' annual performance reporting. Specifically, automated follow-up was not designed to gather several of the data elements requested on the VOC-116.

- 1) Counting former students as "*unemployed*" versus "*not located*."

The VOC-116 asks for the number of completers found to be unemployed. This way of counting former students is inconsistent with the appropriate interpretations that can be made of the SOICC's follow-up data. While automated follow-up's linkages to Texas Unemployment wage records and other administrative data bases can document most students' successful labor market outcomes, some types of employment are not reported (e.g., out-of-state employment, family farm employment, self-employment/contract labor) to the TEC or to any of the other data bases tapped through electronic record linkages. Although it is likely that the majority of students not located as employed are, in fact, unemployed (given the coverage of the UI wage record system, we cannot assume all persons not found are unemployed. The SOICC, therefore, takes great care to report such persons as "*not located*."

The suggestion was made that, in addition to matching seed records to the TEC UI wage records, we match them against TEC UI benefit payments data base to determine which students in an exiting cohort are unemployed. While the SOICC and the Performance Measures and Evaluation Task Group of the TCWEC are giving serious consideration to that recommendation, linkages to the benefit payments data base will not suffice to identify all former students as unemployed. Again, several types of unemployment might be missed:

- Never Worked in Covered Employment

UI benefit payments are pro rated to prior earnings. To be eligible for benefit payments, an individual must have previously worked at a job covered by the state's Unemployment Compensation Act. A former student who has never worked (or who was terminated from any job not covered by the Act) would not receive benefit payments and therefore would not be located through linkages to that data base. The "*never worked*" scenario is especially likely among recent exiters of secondary education (as opposed to exiters of postsecondary institutions and "*second chance opportunities*" workforce development programs). Even if the SOICC establishes record linkages to the TEC's UI benefit payments data base, the "*hit ratio*" in follow-up matches done for public education is not likely to improve significantly.

- Receiving UI Benefits in Another State

A former student who obtains work in another state and is subsequently terminated from employment but does not return to reside in Texas will not be located through record linkages to TEC's UI benefit payments data base nor through the current data exchanges with other states. Interstate data sharing agreements currently in place (as well as those currently in negotiation) provide for the exchange of UI wage record information only. Separate agreements would have to be negotiated to obtain access to other state's UI benefit payments information. Because other states' benefit payment data bases might contain more sensitive information, the "confidentiality barrier"⁵ probably will be higher than it is for access to other states' wage records.

- Exhausted Benefits and "*Discouraged Workers*"

Unemployment insurance benefits are paid for a maximum of twenty-six weeks. Persons with short work histories may not have had sufficient prior earnings from covered employment to receive benefit payments for the maximum period. Although unemployed, a former student who has exhausted benefits would not be identified by a SOICC match of seed records against the UI benefit payments data base. Secondly, persons otherwise eligible for benefits must also demonstrate that they are actively seeking work in order to continue receiving payments. Unemployed former students fitting this technical definition of "*discouraged worker*" would not be identified through matches against the benefit payments data base.

2) The unduplicated count requirement.

The VOC-116 requires unduplicated counts of former students who are working compared to those who are continuing to pursue additional education and training at a postsecondary institution. School districts are forced to make a choice in the way they count their former students who are found to be both working and continuing their education. There are no decision rules to guide school districts confronted with the choice. Arguments have been raised against each decision rule suggested. (Suggested decision rules and the shortcomings of each are listed in the table on the next page.) There are two possible ways to remove the dilemma now confronting school districts.

a) Alter the VOC-116 to request unduplicated counts in three categories:

- employed but not pursuing additional education and training;
- employed and concurrently pursuing additional education and training;
- continuing to pursue additional training and education but not concurrently working.

- b) Permit duplication in the count of students in the "employed" and "continuing to pursue additional education and training" categories.

Of the two options, the SOICC recommends the former insofar as unduplicated counts are less likely to lead to ambiguous interpretations.

ALTERNATIVE DECISION RULES FOR OBTAINING UNDUPLICATED COUNTS WHEN COMPILING THE VOC-116	
Suggested Rule	Shortcoming
Count all former students who are found to be working and going to school as "employed" without taking into consideration either the number of hours worked or the number of semester hours attempted.	For the former student who is working very few hours in order to finance full time pursuit of continued education and training, this decision rule might not reflect that student's perception of the relative importance of the two outcomes. This would be especially true if part-time work is not related to the field of study pursued or is unrelated to his/her ultimate career aspirations.
	Such a decision rule may symbolically over-emphasize employment as the more desired outcome thereby creating perverse incentives for secondary education to neglect to prepare students for success at the next level of training and education or to succeed at life-long learning.
Count all former students who are found to be working and going to school as "continuing to pursue additional education and training" without taking into consideration the number of hours worked or the number of semester hours attempted.	For the former student who is working full-time but also enrolled part-time in an education and training program, this decision rule might not reflect that student's perception of the relative importance of those two concurrent outcomes. This would be especially true if he/she enrolled in a course(s) for avocational/personal growth reasons rather than for the sake of career advancement.
	Such a decision rule may symbolically over-emphasize preparation for additional education and training as the more desired outcome thereby creating perverse incentives for secondary education to neglect the need to target course offerings to labor market demands and develop a curriculum that provides students the competencies needed to meet employer expectations.
If the former student is working full-time/going to school part-time, count as "employed;" If working part-time/going to school full-time, count as "continuing to pursue additional education and training."	Such a decision rule does not make clear how districts should count former students who work part-time while also going to school part-time.
	Definitions of "full-time" and "part-time" have not been set consistently for hours worked or for semester hours attempted.
	Hours worked in the quarter are not currently included in UI wage records thus necessitating continuation of the more expensive employer follow-up survey in addition to record linkages for data collection.
Rely on former student's declaration of intent or self-classification.	Such a decision rule would necessitate continued use of high cost/low response rate alumni surveys.
	Historically, researchers have found it difficult to devise valid and reliable measures of student intent.

3) Customer Satisfaction Data

The VOC-116 requires data on customer satisfaction. (Were former students satisfied with the education and training they received? Are the firms which employ those former students satisfied with their skills and competencies?) Automated follow-up is not designed to tap either kind of customer satisfaction. An alumni survey would be required to assess former students' satisfaction with the education and training they received. Such surveys are typically expensive and have a low response rate. Where response rates are low, the data may be subject to *response set biases*. Additional elements would have to be added to the current employer follow-up survey if the SOICC is expected to gather data on their satisfaction with the vocational program completers they have hired. The SOICC has not added such items because:

- a) Any increase in the number of items on a survey instrument is likely to decrease the employer response rate.
- b) A former student's permission might be required before the SOICC could request a performance rating from his/her employer. Any process for obtaining student consent to an employment performance rating would be cumbersome and time consuming. Non-random patterns in refusal rates would make it difficult if not impossible to draw inferences about an entire exiting cohort from the data obtained.
- c) Employers may object to providing performance ratings on individual employees. Some employers fear that expressions of negative ratings of any employee may provoke litigation. Fearing litigation, employers might:
 - refuse to answer satisfaction-related questions;
 - refuse to answer the entire survey; or
 - give disingenuous positive or ambiguous ratings.
- d) All parties involved might be subject to the threat of litigation by those whose negative performance ratings were reported to anyone outside the firm. In what legal analysts call the "*search for deep pockets*," attorneys for the allegedly aggrieved former student might threaten litigation against the school district, the TEA, and/or the SOICC for having asked for employers' ratings.
- e) The SOICC firmly believes that employer satisfaction can be inferred (without risk of litigation) from longitudinal empirical data on former students' job retention, earnings gains, and career advancement.

4) VOC-116 Submission Deadline (See Data Delivery and Report Deadline Timeline, Appendix F)

The cycle of seed record matching and the employer follow-up survey are dictated by the official data release dates by the participating agencies. Seed records on the exiting school year cohort of high school seniors is not released officially by the TEA's PEIMS Division until April 1 of the following calendar year. At that time, the Texas Higher Education Coordinating Board's master enrollment files for the current school year's fall semester are available for matching. The match to identify former students who were employed in the fourth quarter of the calendar year in which they exited secondary education cannot be conducted until the TEC officially releases those UI wage records on the first of May. Other stakeholders are eager to obtain information from both the TEA and the TEC as soon as possible after their respective official release dates. There are no guarantees that the SOICC's record matching requests will receive priority over other stakeholders' requests. In addition, any changes in the seed record format or in the output data files may further delay those agencies' processing of the SOICC's requests because previously used seed record extraction and matching programs must be revised.

The first round of record matching, therefore, usually is not completed until the first of June. Additional time is required to disaggregate the master output file by the county/district identifier and to distribute the data files to the TEA, school districts, and/or Education Service Centers. Additional time may be required in the larger districts to disaggregate their files by campus identifier and to deliver those files to persons responsible for compiling the VOC-116. The data must then be analyzed with the results transferred to the appropriate columns on the pre-printed VOC-116 form. Assuming that the task is assigned top priority and assuming a district has professional staff trained in data base management or in the use of statistics software (or has access to same through the nearest Education Service Center), the data analysis and compilation of the VOC-116 should take no more than one week. If all goes well, a district should be able to complete its VOC-116 using data from the automated follow-up system on or about June 15th each year.

The situation is further complicated by the way the SOICC will conduct matches against other administrative data bases. To reduce costs and the burdens upon those agencies that have agreed to provide other kinds of outcome data, the Texas SOICC will request record matching against military, civil service, Postal Service, out-of-state employment files, and out-of-state higher education data bases only for those not located during the first round matching. Extraction of Social Security numbers for the "not located" category takes place after data files containing the results of first round matches are distributed to the TEA and to the school districts. Additional time elapses before the seed records of those "not located" can be delivered to the other agencies, linked to their data bases, returned to the SOICC, disaggregated to the county/district

level, delivered to the school districts, disaggregated to the campus level, analyzed, and manually copied onto the pre-printed VOC-116 form. This portion of the process may take several months depending upon the priorities the federal and out-of-state agencies assign to the SOICC's data matching requests.

Although the SOICC has employer addresses in its possession at the conclusion of the UI wage record match, the next step is delayed while the books are closed on the current fiscal year. Funds for the employer follow-up survey on an exiting School Year cohort are included in the budget for the subsequent Fiscal Year which begins on July 1st. The survey subcontract is awarded through a competitive request for proposals. The request for proposals cannot be let until all required steps are completed to open the books for the next fiscal year. Then survey subcontractor must be given time to prepare and mail the survey instruments. Employers are given adequate time to respond. The subcontractor needs additional time to record and code employer responses and to deliver outcomes files to the SOICC. The SOICC takes time to disaggregate and deliver the data by county/district number and provide technical assistance to stakeholders in the analysis of that data. For its 1994-95 exiting cohort, a district can expect the SOICC to provide occupationally-specific outcomes near the end of May of 1997.

The anticipated delivery date for information from the first round matches is "*too close for comfort*" to expect districts to meet their VOC-116 delivery deadline (June 1) and the forms would have to be submitted without information about military, federal civil service, Postal Service, or out-of-state outcomes. The anticipated May 1997 delivery date for occupationally-specific outcomes information based on the employer follow-up survey is fully a year after the districts are asked by TEA to make reliable and valid determinations of training-relatedness of the job placements achieved by their former students. These differences in the capacity of the SOICC to deliver various pieces of outcomes information and the compliance reporting deadlines required by TEA must be ironed out if the system is expected to fully relieve the districts of their follow-up data collection and reporting burdens.

RECOMENDATIONS FOR IMPROVED SERVICES TO PUBLIC EDUCATION

1) *Extend the due date of the VOC-116 to give districts more time to analyze the follow-up data returned to them from the SOICC's matching efforts.* This simple request assumes that the purpose of follow-up is to provide meaningful information that will help stakeholders manage and improve programs. Valuable information is lost or ignored when follow-up is construed as a compliance reporting exercise with the time to collect important data and analyze it carefully cut short in order to meet a deadline. If given several additional weeks' *cushion*, the Automated Follow-Up System could generate reports that were more useful to the districts and, by standardizing those reports, relieve the TEA of some edit checking burdens which, in turn, would still permit the TEA to file its federal reports on time.

2) *Absorb the costs of matching all seed records (instead of the "not located") against federal and out-of-state data bases thus permitting those matches to occur concurrently (instead of sequentially) with the in-state data runs.* The per unit costs of these matches are extremely low yet the benefits derived in terms of completing the picture of successful results achieved is invaluable. The sequential process delays matching against federal and out-of-state records until an exceptions list of those "not found" in Texas in-state matches is generated. This delay adds at least a month to our efforts to paint a complete picture of successful student outcomes while save no more the few hundred dollars difference between the costs of match all seed records with external sources versus the costs of matching only the exceptions list with those sources.

3a) *Eliminate items which require occupationally-specific information from the districts' initial submissions of their VOC-116s.*

3b) *Allow districts to amend their VOC-116s as occupationally-specific information is made available later from the employer follow-up survey.*

Because of the information release cycle for the UI wage record system and the time required to conduct an employer follow-up survey, the Automated Follow-Up System cannot deliver occupationally-specific information to the school districts or to TEA until approximately one year after secondary students have exited high school. Occupationally-specific information is integral to trend analysis. The occupationally-specific results achieved by any given exiting cohort must be explained in a long term context that is at odds with the immediate demands for collecting and analyzing occupational employment information to complete the VOC-116 on time. In the urgency of complying with VOC-116 deadlines, districts have traditionally collected occupational employment information through mail and telephone surveys of their former students at great expense with typically low response rates. Their reliance on former students' self-reported employment outcomes (without verification) raises questions of validity. Lastly, the compliance exercise deprives the districts of truly useful program management information by requiring that information (often not representative and, in some cases, misinformation) be put on a VOC-116 form quickly without taking the time for proper analysis to identify trends.

4a) *Transform existing customer employer-satisfaction items on the VOC-116 into elements that can be addressed with empirical evidence from longitudinal follow-up (e.g., job/employment retention, earnings gains, career advancement).*

4b) *Allow districts to amend their initial VOC-116s by providing such information as it becomes available from longitudinal follow-up studies.**

Timing is, again, crucial to the validity and reliability of this kind of information. If compelled to report customer satisfaction on the VOC-116, districts tend to rely on costly surveys with low response rates. Moreover, experienced researchers question whether employers have time to form sound judgments about employees in a short time (as in the time elapsed between June

when students in the cohort exited high school and the Fourth Quarter of the year when districts typically gather employer satisfaction data). In addition, the fear of litigation may cause employers to refrain from expressing negative evaluations in response to a survey. On the other hand, empirical indicators (such as employment retention and earnings gains) can be obtained cheaply and reliably through UI wage record matching. However, by their very nature, such indicators of employer satisfaction require the collection of data from the UI wage records for at least two points in time after students exit high school.

5a) *Petition TEA for access to the preceding school year's data prior to the official public release date so the extraction of seed records can occur earlier in the year.*

5b) *Petition TEC for access to UI wage records from the fourth quarter for the preceding year prior to the May 1 official release date so the subcontractor will have the contact information needed to start the employer follow-up survey process earlier.*

Recommendations 5a and 5b should be considered only if recommendations 1 through 4a & 4b are rejected. Official release dates were not set arbitrarily by TEA and TEC. Districts need sufficient time to "close out" their data for each school year prior to submitting reports to the TEA. The agency, in turn, needs time to receive and process those data. The same is true for the UI wage record system. Employers need time to "close out" each fiscal period before filing quarterly reports with TEC. The agency, in turn, needs time to receive and process those data. If the districts and employers reporting the data and the agencies receiving and processing the data are not given sufficient time to perform necessary edit checks, quality control is sacrificed. The SOICC believes that implementation of recommendations 1 through 3, on the other hand, can achieve the desired results without any loss of data quality control.

6) *Fund follow-up from a permanent line item in the state's General Revenue Budget.* By doing so, Follow-Up System activities would be scheduled around the state's fiscal year rather than the federal fiscal year. The employer follow-up survey process would no longer be delayed by federal rules that make it difficult to enter into a subcontract for services which begin in one fiscal year but end in the next fiscal year. This recommended change seems simple but has profound consequences. Namely, it permits the Automated Follow-Up System to proceed efficiently with activities schedules according to accepted research practices rather than around the barriers created by the inconsistencies of school years, state fiscal years, federal fiscal years, and the calendar year.

RESULTS OF PUBLIC EDUCATION FOLLOW-UP

RECORD MATCHING ON THE PILOT DISTRICTS' 1993-1994 SENIOR COHORT

The Automated Student and Adult Learner Follow-Up System used automated record linkages on behalf of the twenty-five pilot districts to determine the results achieved by senior students from the 1993-1994 school year after they exited high school. Some who had attained senior status did not graduate with their cohort but by including those cases in the study, districts could compare results achieved by senior students who graduated with those who did not graduate. In addition, while the primary focus of the follow-up effort is on completers of career and technology education programs, inclusion of an entire senior cohort permits comparisons of results achieved by vocational students, academic students, and Tech Prep students. Analysis of general results was done using data from all pilot school districts. Detailed analysis was done district-by-district on the results achieved by the students who completed occupationally-specific training offered in the twenty-five pilot districts.

Rate of Success in Documenting Results Achieved by the Pilot District's Former Students

The TEA was provided a list of county-district identification numbers for the school districts that had volunteered to participate in the pilot study of follow-up services to public education and for which the Texas SOICC had written permission for data access on file from appropriate school board chairpersons or superintendents. TEA programmers extracted the seed records as specified in a data request from the Texas SOICC. (The seed records were transmitted to the Texas SOICC in the format described in Appendix G.1) TEA extracted 29,071 seed records for the twenty-five pilot districts. Of those, 2,615 records (approximately 9%) either contained no Social Security number or an invalid Social Security number, e.g., containing one or more alphabetic characters rather than all numerals.⁶ That provided the SOICC with a file containing 26,456 unduplicated Social Security numbers.

Seed records were matched to the Higher Education Coordinating Board's master enrollment files to determine who among the exiting cohort continued to pursue education and training at a public college, university or health science center in Texas. (See Appendix G.3 for output file format.) Seed records were also matched to TEC UI wage records to determine which former students were employed in the fourth quarter of 1994 in a job covered by the state's Unemployment Compensation Act. (See Appendix G.4) As a result of the matching, 30,294 records were returned to the SOICC. The increase of 3,838 records indicated that some subjects in the cohort held multiple jobs during the snapshot quarter because each "hit" in TEC UI files generated a separate record.

For the purpose of follow-up analysis, the SOICC needed an unduplicated set of individual records. Therefore, the SOICC extracted from the matched files the one record for each subject in the cohort containing the highest earnings in the snapshot quarter. In exercising that decision rule, the count of unduplicated Social Security numbers returned to 26,456.

Of those in the cohort studied, the electronic record linkages served to document successful outcomes for 19,696 or 74.4%. In previous years, the SOICC located 85% of the exiters of community and technical college programs either in covered employment or enrolled at another Texas public institution of higher education. While the "located" was lower for the follow-up of secondary education exiters, the results were not unexpected. All other considerations being equal, employers generally prefer to hire more mature applicants with at least some college training; therefore, one would expect a small percentage of an exiting high school cohort to enter the labor market compared to an exiting cohort from community and technical colleges. Secondly, we hypothesized (but do not have the data to thoroughly test) that a greater percentage of high school exiters would not be located through existing record linkages because they pursued higher education at out-of-state or private institutions with which the SOICC has no data sharing agreements.⁷

Under these circumstances, care must be taken to avoid erroneous interpretations of the location rate. The lower "hit" rate for the exiting high school cohort compared to the exiting cohort from community or technical colleges does not imply that public education is less likely to produce successful results than higher education; but, rather, the kinds of successful results achieved by those exiting community or technical colleges are more likely to be documented through the limited range of data bases accessible by the SOICC through interagency data sharing agreements. We hypothesize that if the supplemental follow-up procedure available to institutions of higher education was used by the state's high schools, the final hit rates for higher education and public education would be comparable. The mix of successful results, however, might be different with entered employment rates higher for community and technical college exiters while a disproportionate number of high school exiters continued pursuit of education and training.

What Results Could Be Documented for Former Students from Pilot Districts in the Fourth Quarter of the Year in Which They Exited High School?

Result	For Entire Exiting Cohort	Among Those Located
Working Only	28.2%	37.8%
Working & Continuing Education	26.7%	35.9%
Continuing Education Only	19.5%	26.3%
Percent results documented by Automated Follow-Up	74.4%	100.0%
Number of subjects	26,456	19,696

General Findings

Does gender make a difference? Seed records consisted of 13,031 (49.3%) males, 13,425 (50.7%) females. A slightly higher percentage of the females were located by the follow-up system (75.2% of females were located compared to 73.7% of the males). In general, the females were more likely to continue their education and training at a Texas public institution of higher education while males in the cohort were more likely to be found working only.

RESULTS BY GENDER AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP

RESULT	MALES		FEMALES	
A. Continued education and training (A = B+C)	59.0%		65.1%	
B. Continued ed. only		26.3%		26.2%
C. Continued ed. & employed		32.7%		38.9%
D. Employed only		41.0%		34.8%
E. Employed (E = C+D)	73.7%		73.7%	
TOTAL %	N.A.	100.0%	N.A.	100.0%
Total Subjects		13,031		13,425
Percentage located		73.7%		75.2%

Does ethnicity make a difference? Standard census code classifications were used in identifying the ethnicity of subjects in the exiting senior cohort for the pilot districts. Of the 26,456 subjects, only 2/10th of 1% (n = 48) were American Indian/Native Alaskans. Of those 32 (or 66.7%) were located. Because of the small numbers involved, results for this group are not included in the table on the next page.

RESULTS BY ETHNICITY **AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP**

RESULTS	Asian/ Pacific Islander		Black (non- Hispanic)		Hispanic		White (non- Hispanic)	
A. Continued ed. and training (A = B+C)	81.5%		49.7%		55.3%		68.2%	
B. Continued ed. only		47.1%		22.6%		22.6%		27.8%
C. Cont. ed. & employed		34.4%		27.1%		32.7%		40.4%
D. Employed only		18.5%		50.3%		44.8%		31.8%
E. Employed (E = C+D)	52.9%		77.4%		77.5%		72.2%	
TOTAL %	*	100%	*	100%	*	100%	*	100%
Total Subjects	1,067		3,589		8,622		13,130	
Percentage located	76.9%		69.8%		73.6%		76.1%	

* Percentages do not add to 100% because those former students who were found employed and continuing to pursue education and training (row C) are counted twice (in Rows A and E).

Of the ethnic groups in the pilot districts' exit cohort, the smallest percentage of successes were documented through the Automated Follow-Up System's record linkages for Blacks (non-Hispanic). Of those Blacks located, fully half were found employed but not continuing their education and training at a public institution of higher education in Texas. Conversely, the highest percentage of successful results were documented for Asians/Pacific Islanders through the use of record linkage techniques. Of all the ethnic groups, they were the most likely to be found continuing their education and training but the least likely to be employed.

Does economic status make a difference? In submitting records to PEIMS, the pilot districts classified their students as "economically disadvantaged" or "not economically disadvantaged." Among the pilot districts' exiting senior cohort, 4,587 (or 17.3%) were classified as economically disadvantaged; 21,869 (or 82.7%) were not economically disadvantaged according to PEIMS data standards. It was far more difficult to use record linkage techniques to document successful results among the economically disadvantaged. Of those located, the economically disadvantaged were less likely to continue the pursuit of education and training at a public postsecondary institution in Texas and most likely to be found employed only.

**RESULTS BY ECONOMIC STATUS
AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP**

RESULT	ECONOMICALLY DISADVANTAGED		NOT ECONOMICALLY DISADVANTAGED	
A. Continued education and training (A= B+C)	46.9%		65.0%	
B. Continued ed. only		21.6%		27.1%
C. Continued ed. & employed		25.3%		37.9%
D. Employed only		53.1%		34.9%
E. Employed (E = C+D)	78.4%		72.8%	
TOTAL %	duplicated count of cont. ed. + employed	100.0%	duplicated count of cont. ed. + employed	100.0%
Total subjects		4,587		21,869
Percentage located		68.0%		75.8%

Does student intent make a difference? Before exiting high school, students were asked if they planned on going to college. Among the subjects from the pilot districts' exiting cohort, a majority (16,245 or 61.4%) said "yes;" 10,211 (38.6%) said that they did not plan to go on to college. Automated record linkage techniques were more likely to document results for those who expressed plans to go to college (79.2% contrasted to 66.9% among those who had no college plans). Of those in the cohort studied who expressed an intent to go to college, 76.9% were located in the Higher Education Coordinating Board's master enrollment files for the subsequent fall term. (See the results by student intent on the following page.)

While 23.1% of those with college plans were located in the labor market and listed as "working only," it is important to note that the automated follow-up system made no attempt to locate subjects who enrolled in private institutions of higher education. What was more surprising was that 2,357 of the pilot districts' exiting seniors who had expressed to their counselors no plans for college were found enrolled in a public institution of higher education in Texas.

Does the level of high school education and training make a difference? The PEIMS differentiates students enrolled in high school programs for "gifted" students from those not in programs for "gifted and talented" students. Of those in the pilot districts' exiting cohort, 2,024 (7.7%) were listed as "gifted;" 24,432 (92.3%) were not. The automated follow-up system had equal success in documenting the post high school results achieved by both groups: 73.7% of the "gifted" students were located; 74.5% of those exiting seniors not previously in "gifted and talented programs" were located. It was not surprising to find that those who exited from programs for "gifted" students were more likely to enroll in postsecondary education and training; conversely, those exiting seniors not previously enrolled in a "gifted and talented program" were nearly three times more likely to be found employed only.

**RESULTS BY EXPRESSED PLANS FOR COLLEGE
AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP**

RESULT	PLANNED TO GO TO COLLEGE		EXPRESSED NO COLLEGE PLANS	
A. Continued education and training (A = B+C)	76.9%		34.5%	
B. Continued ed. only		33.8%		12.0%
C. Continued ed. & employed		43.1%		22.5%
D. Employed only		23.1%		65.0%
E. Employed (E = C+D)	66.2%		87.5%	
TOTAL %	duplicated count of cont. ed. + employed	100.0%	duplicated count of cont. ed. + employed	100.0%
Total subjects	16,245		10,211	
Percentage located	79.2%		66.9%	

**RESULTS BY LEVEL OF HIGH SCHOOL EDUCATION AND TRAINING
AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP**

RESULT	IN HIGH SCHOOL PROGRAM FOR "GIFTED" STUDENTS		NOT IN HIGH SCHOOL PROGRAM FOR "GIFTED" STUDENTS	
A. Continued education and training (A = B+C)	85.9%		60.2%	
B. Continued ed. only		43.5%		24.8%
C. Continued ed. & employed		42.4%		35.4%
D. Employed only		14.2%		39.8%
E. Employed (E = C+D)	56.6%		75.2%	
TOTAL %	duplicated count of cont. ed. + employed	100.0%	duplicated count of cont. ed. + employed	100.0%
Total subjects	2,024		21,869	
Percentage located	73.7%		75.8%	

Does the former student's high school graduation type make a difference? Former students are classified in PEIMS by "graduation type." There are five basic categories in this classification:

- did not graduate with cohort

While subjects in this group had attained senior status as of the October 1993 "snapshot," they did not graduate with the class of 1994. These may have dropped out, failed to complete a sufficient number of courses, or failed the TAAS exam.

- regular graduation
- advanced graduate
- advanced graduate with honors
- completed individual education plan (IEP)

There are additional categories under IEP. However, the number of subjects across all IEP categories was so small that their results are not reported herein. Districts are encouraged to do additional analysis on their own to determine the effectiveness of the Individual Educational Planning process for students with special needs.

RESULTS BY GRADUATION TYPE AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP

RESULTS	DID NOT GRADUATE WITH COHORT		REGULAR GRADUATION		ADVANCED GRADUATE		ADVANCED GRADUATE WITH HONORS	
A. Continued ed. and training (A = B+C)	25.2%		58.4%		81.4%		85.9%	
B. Continued ed. only		10.1%		22.7%		32.6%		44.2%
C. Cont. ed. & employed		15.1%		35.7%		48.8%		41.7%
D. Employed only		74.9%		41.7%		18.6%		14.1%
E. Employed (E = C+D)	90.0%		77.4%		67.4%		55.8%	
TOTAL %	*	100%	*	100%	*	100%	*	100%
Total Subjects	4,850		11,988		4,634		4,576	
Percentage located	61.5%		77.1%		82.8%		74.2%	

* Percentage do not add to 100% because those former students who were found employed and continuing to pursue education and training (Row C) are counted twice (in Rows A and E).

The results obtained strongly support the common sense hypothesis. Those who did not graduate with their exit cohort were more likely to be found employed but not pursuing additional education and training while advanced graduates and advanced graduates with honors were more likely to be found enrolled at a public postsecondary institution in Texas. It should be noted that more than ¼th of those who did not graduate with their exit cohort were located in the subsequent fall term enrolled in a public institution of higher education in Texas. This unexpected result suggests that some of the subjects in this classification may have:

- a) transferred to and graduated from another school district (not included in the set of volunteer pilot sites);
- b) completed their course work and/or TAAS tests in the summer after their peers graduated; or
- c) were admitted to a college or university under special circumstances.

Does type of program completed make a difference? The PEIMS contains a "vocational program indicator." Under this indicator, students are classified as:

- 0 took no vocational education courses during high school;
- 1 took some vocational courses during high school (but not as part of a coherent sequence or approved Tech Prep program);
- 2 completed vocational education courses as part of a coherent sequence (but not in an approved Tech Prep program); or
- 3 completed the secondary education portion of an approved Tech Program which integrated vocational and academic courses in a coherent sequence that articulated to an advanced postsecondary program.

(It should be noted that in the first year of operation, there was some confusion and disagreement about which secondary students should be coded as "Tech Prep." Secondly, students in this exit cohort were flagged in PEIMS as *Tech Prep* completers even though they has only been exposed to one year of a program which theoretically should have begun in junior high or middle school with portions offered to them throughout their secondary training. Lastly, please remember that these data are based on seed records from volunteer districts which do not necessarily represent the population of school districts. The results on the next page should not be taken as definitive; but, rather, they should suggest hypotheses worth testing as we study cohorts exiting high schools in subsequent school years when, presumably, more consistency is achieved among districts in coding Tech Prep students.)

**RESULTS BY VOCATIONAL INDICATOR
AMONG THOSE LOCATED THROUGH AUTOMATED FOLLOW-UP**

RESULTS	DID NOT TAKE VOCA- TIONAL COURSES		TOOK SOME VOCATIONAL COURSES		COMPLETED COHERENT SEQUENCE		COMPLETED SECONDARY TECH PREP PROGRAM	
A. Continued ed. and training (A = B+C)	54.7%		62.8%		54.2%		62.5%	
B. Continued ed. only		29.4%		25.8%		19.2%		23.7%
C. Cont. ed. & employed		35.3%		37.0%		35.0%		38.8%
D. Employed only		35.3%		37.2%		45.9%		37.5%
E. Employed (E = C+D)	70.6%		74.2%		80.9%		76.3%	
TOTAL %	*	100%	*	100%	*	100%	*	100%
Total Subjects	12,475		8,850		4,460		689	
Percentage located	71.9%		77.2%		75.4%		79.0%	

* Percentages do not add to 100% because counts for Row C are duplicated in Rows A and E.

The cohort studied is the first for which PEIMS included Tech Prep programs in the vocational identifier code. Under ideal circumstances, Tech Prep programs include career awareness courses and basic career counseling beginning in the middle or junior high school. While the volunteer districts selected for this pilot study had approved Tech Prep programs, those programs were so new that the 1993-94 cohort of exiting seniors would not have enjoyed the advantages of a coherent Tech Prep program; rather, they may have:

- a) converted to Tech Prep enrollments from a "2+2" or "2+2+2" program which preceded their district's receipt of approval for an articulated Tech Prep program; or
- b) taken courses listed in their district's Tech Prep plan which integrated traditional academic instruction with applied education and/or those career and technology courses for which college credit is available under an approved articulation agreement.

Results achieved by the completers of Tech Prep high school programs may be different than those achieved by subsequent cohorts which are able to enjoy the benefits of a fully articulated program that begins in the junior high or middle school. **Pilot districts and other readers of this report are advised to draw no inferences from these results.** At best, these results may suggest testable hypotheses for use in analyzing the outcomes achieved by subsequent cohorts of Tech Prep completers.

This analysis of secondary education's follow-up data has focused on the independent effects of independent variables taken one at a time. Districts are strongly urged to consider the interactive affects of these and other variables. For example, economic status may be the best predictor of former students' need to work or, conversely, their capacity to pay for their

own higher education. It may be the case that an apparent relationship between expressed college plans, ethnicity or gender and post-exit results may weaken or disappear if controlled for economic status.⁸

One type of interaction worth noting is the relationship between quarterly earnings and the degree to which subjects located in the labor force attempted to combine work with continued pursuit of education and training. The match with UI wage records located 14,525 former students from the pilot districts' 1993-1994 exit cohort in the Texas labor market. On average they earned \$1,274 during the fourth quarter of 1994. Less than 30% of those working earned the equivalent of the minimum wage for full-time/full-quarter employment. A little over 7% earned the full-time/full-quarter equivalent of 1½ times the minimum wage while only 2.5% earned the equivalent of full-time/full-quarter work at twice the minimum wage. Generally speaking, the more time a subject committed to the pursuit of education and training, the less available they were for work; quarterly earnings decreased as semester hours attempted at an institution of higher education increased.

QUARTERLY EARNINGS BY SEMESTER HOURS ATTEMPTED AMONG SUBJECTS LOCATED IN THE TEXAS WORKFORCE

Semester Hours Attempted at Texas Public Institution of Higher Education	Number of Subjects	Average Earnings 4th Quarter 1994	Percent Earning More than \$2,205/Qtr.	Percent Earning More than \$3,037/Qtr.	Percent Earning More than \$4,050/Qtr.
0 (worked only)	7,450	\$1,460	27.9%	11.0%	4.0%
1 to 6 Semester Hrs.	610	\$1,622	33.4%	12.6%	4.8%
7 to 12 Semester Hrs.	2,968	\$1,190	18.9%	3.6%	0.5%
More than 12 Smstr. Hrs.	3,497	\$ 888	10.2%	1.6%	0.5%

What kind of jobs are former students likely to obtain immediately after exiting high school?

Record matching of public education seed records with the UI wage records in the fourth quarter of the year in which students exited high school yields information about the labor market conditions they face. General economic trends show a decrease in extractive industries (e.g., agriculture and oil and gas exploration) and manufacturing while the service sectors are experiencing rapid job growth. High school exiters must compete for high wage jobs with older persons who may be perceived by employers as more mature, more experienced, and/or more fully trained. It is not surprising under these conditions to find that the jobs open to recent high school exiters lie chiefly in the service sector. Of the 14,525 subjects in the exit cohort studied who were found to be employed, more than 80% (11,690) were employed in one of 15 service industries. Those industries are listed below in descending order by the number of jobs documented through the UI wage record match. ("Full-time" in the table below is defined as anyone earning more than \$2,025 per quarter which would be the equivalent of 40 hours per week at minimum wage for the full quarter.)

EMPLOYMENT BY INDUSTRY FOR THOSE IN THE EXITING COHORT LOCATED THROUGH ELECTRONIC MATCH TO TEXAS UI WAGE RECORDS

SIC	INDUSTRY*	NUMBER LOCATED VIA UI MATCH	AVERAGE QUARTERLY EARNINGS	ESTIMATED WORKING FULL-TIME	AVG. QRTL EARNINGS FOR FULL-TIMERS	EST LOCATED WORKING FULL-TIME
58	Eat. & Drink. Estb.	3,120	\$ 1,057	389	\$ 2,801	12.5%
54	Food/Grocery Stores	1,399	\$ 1,313	267	\$ 2,845	19.1%
53	General Merchandise	1,270	\$ 1,350	257	\$ 2,710	20.2%
73	Business Services	1,154	\$ 927	178	\$ 3,261	15.4%
56	Apparel/Accessories	927	\$ 850	83	\$ 2,859	8.7%
59	Misc. Retail	869	\$ 1,113	114	\$ 2,835	13.1%
80	Health Care	421	\$ 1,631	115	\$ 3,455	27.3%
82	Education	376	\$ 784	34	\$ 3,779	9.0%
79	Amusement/Recreation	367	\$ 901	105	\$ 2,776	28.6%
57	Furniture Stores	333	\$ 1,509	89	\$ 2,901	26.7%
78	Movie Theaters/Video	324	\$ 925	31	\$ 2,620	9.6%
55	Auto Dealers and Service Stations	292	\$ 2,000	121	\$ 3,351	41.4%
83	Social Services	290	\$ 1,052	50	\$ 2,785	17.2%
72	Personal Services	273	\$ 1,096	54	\$ 2,788	19.8%
50	Wholesale - Durable	245	\$ 1,790	91	\$ 3,408	37.1%

* No other industry accounted for more than 240 employment results or less than 10% for this exit cohort from the pilot districts.

What kind of "careers" are available to those who enter the labor market full time after high school? The concept of a career undoubtedly includes both current employment and long term aspirations. Because the SOICC has no access to data on the aspirations of subjects in the exit cohort, we are forced to use a crude empirical method for identifying those who "embarked on a career" after exiting high school. Persons in this category were found working full-time (as indicated by earnings of more than \$2,025 or the equivalent of full time for a full quarter at minimum wage) and who were not found to be pursuing additional education and training at a Texas public institution of higher education. The top ten industries where former students who did not pursue education and training beyond high school were found by the Automated Student Follow-Up System are listed on the next page in descending order by the number of subjects found employed. Also shown are the average wages earned by those working full time and not pursuing additional education and training.

Top Ten Industries Employing Those Who Do Not Pursue Education and Training Beyond High School

<u>SIC Code</u>	<u>Industry</u>	<u>Number of Subjects</u>	<u>Average Quarterly Earnings</u>
58	Eating & Drinking	197	\$ 2,549
53	Gen. Merchandise	138	\$ 2,572
54	Food Stores	121	\$ 2,664
59	Miscellaneous Retail	65	\$ 2,501
73	Business Services	56	\$ 3,121
80	Health Care	45	\$ 3,339
56	Apparel/Accessories	44	\$ 2,599
57	Furniture Stores	41	\$ 2,617
50	Wholesale - Durable	29	\$ 3,010
42	Trucking	22	\$ 2,608

With the exception of Furniture Stores, Business Services, and Health Care, all the industries above have high turnover ratios and relatively low aggregate hour indices (a measure of hours worked nationwide proportionate to the number of persons employed). Data from the Business Services industry should be viewed with caution because that industry includes Personnel Leasing Firms and Temporary Employment Agencies where workers remain on the record as a nominal employee of the firm but may experience prolonged episodes without income as they move from serving one client firm to the next. On average (with the exception of the Health Care) none of the industries listed above pays a "*family wage*" to persons with no more than a high school diploma. (Herein we base our definition of a "*family wage*" on standards set by the United States Department of Health and Human Services. They periodically revise eligibility criteria for various programs according to the earnings required to sustain a family of four above the level of poverty. In 1994 they determined that would require earnings of \$14,350 per year or \$3,587 per quarter.)

The bottom line is that employment opportunities in industries offering full-time work at "*family wages*" with low turnover are rarely available to persons with no more than a high school diploma *regardless of the type or quality of secondary education they received*. In the table below, former student were group into two categories for comparison. The first grouping combined those who took no vocational courses (Voc. Ed. indicator in PEIMS = 0) or who had taken some vocational courses other than for the purpose of completing a coherent sequence (Voc. Ed Indicator in PEIMS = 1). Because there were so few Tech Prep completers (Voc. Ed. Indicator in PEIMS = 3) in the pilot districts' 1993-1994 cohort of exiting seniors, they were combined with those who had completed a coherent sequence of career and technology courses (Voc. Ed. Indicator in PEIMS = 2). The analysis show no significant difference between the groups in terms of their rates of success immediately after high school in obtaining employment that pays a "*family wage*."

**RATES OF EMPLOYMENT AT A *FAMILY WAGE* BY TYPE OF TRAINING
AMONG SUBJECTS IN THE PILOT DISTRICTS' 1993-1994 EXITING COHORT**

	Entire Cohort	Found to be Employed	Employed, Not Pursuing Higher Ed.	Employed Full Time (with Qrt. \$ >2,025)	Employed Full Time, Not Pursuing Higher Ed
Total all former students	26,456	14,525	7,450	3,336	2,216
Avg. earnings/quarter	N.A.	\$1,274	\$1,460	\$3,032	\$3,164
Earning <i>family wage</i>	589	589	472	589	472
% earning <i>family wage</i>	2.2%	4.1%	6.3%	17.7%	21.3%
No voc ed or no coherent sequence of career/tech. courses in High School	21,307	11,391	5,703	2,527	1,653
Avg. earnings/quarter	N.A.	\$1,249	\$1,441	\$3,030	\$3,165
Earning <i>family wage</i>	444	444	352	444	352
% earning <i>family wage</i>	2.1%	3.9%	6.2%	17.6%	21.3%
Completed coherent sequence or secondary portion of Tech Prep program	5,149	3,134	1,747	809	563
Avg. earnings/quarter	N.A.	\$1,363	\$1,523	\$3,038	\$3,162
Earning <i>family wage</i>	145	145	120	145	120
% earning <i>family wage</i>	2.8%	4.6%	6.9%	17.9%	21.3%

This should not be construed as a criticism of the education and training curricula offered at the secondary level in Texas; rather, *it is a reflection of the harsh realities of the labor market students face when they exit high school.*

- It should draw attention to the need for program-by-program analysis (and the urgency of revising the TEA's data coding structure to facilitate program level analysis).

It is entirely possible that some career and technical education programs are more likely than others to provide students the competencies they need in order to command a *family wage* upon initial entry into the labor market. Program-by-program analysis of secondary education's results should help planners and curriculum developers identify *niche* opportunities. In those niches of the labor market where *family wage* jobs remain open to persons with no more than a high school diploma, the focus properly can be on the preparation of students for immediate job placement. But for the vast majority of programs, it appears that secondary education programs should put a premium on preparing students for success at the next level of education and training rather than on immediate job placement.

This has profound implications for program evaluation. The "cookie cutter" or "one size fits all" approach to performance measures and standards is inappropriate. Where careful demand occupation targeting (validated by the follow-up system on the basis of documented results achieved by prior cohorts) indicates that a particular training program is related to an industry which offers *family wage* employment for exiting seniors, labor market outcome measures should be applied. For all other occupationally-specific training programs, measures of immediate labor market outcomes should be de-emphasized in favor of additional emphasis on the degree to which exiting students were prepared to succeed⁹ at the next level of education and training. Unless the applicability of core measures and standards are determined through the analysis of industrial or occupational employment practices, overemphasis on labor market outcomes for exiting seniors may create *perverse incentives* for school districts to "make their numbers" by "rushing" young people into the work-force when they would be better advised to get more education and training.

- Secondly, it should draw attention to the need for the longitudinal study of long-term results achieved by this cohort. The benefits students derive from improvements in program content, innovations in instructional approaches, and collaborative student/parent/counselor/potential-employer development of coherently sequenced/work-experience-capped career planning may be delayed for years while they gain maturity, receive more advanced education and training, and accumulate work histories in lower skill/ lower wage jobs which demonstrate their readiness to advance along a career pathway. Where labor market targeting and the follow-up system's analysis of results achieved by prior cohorts indicate that an industry seldom offers occupational employment to persons under twenty (for example), it would be more appropriate to evaluate related training programs offered at the secondary level by the results documented through automated follow-up in the third and fifth year intervals of longitudinal studies.
- Above all, it demonstrates the need to inform students at the very earliest stages of their career awareness about the realities of the labor market to crystalize their understanding of the connection between the amount of training they acquire and their income-generating potential.

Given that education and training beyond high school is the key to most occupations which pay a *family wage*, it is helpful for school districts to determine which institutions their exiting seniors select. Information about the postsecondary enrollment patterns (by institution and major) should help secondary education in collaborating with their higher education partners on articulation strategies and formal agreements and improving the counseling provided at the high school level. District analysts are encouraged to determine which post-secondary institutions account for the enrollments of their college/university-bound former students and to track the secondary program-to-postsecondary program patterns.

Because the pilot districts are not representative of all districts in the state, no analysis was done by the Follow-Up Director on their postsecondary enrollment outcomes (e.g., frequency distribution by postsecondary FICE code by secondary County/District identification code). Preliminary review of the data, however, indicate hypotheses that districts should test for their own exit cohorts. The *null hypothesis* is that the *distribution* of any given district's college/university-bound former students should be proportionate to each-public postsecondary institution's share of all students enrolled across all Texas public institutions of higher education. Districts, however, should expect to find that a disproportionate number of their most recent exit cohort of seniors will be found enrolled at the colleges and universities closest in proximity to the district. Amarillo Community College, for example, accounted for more than its proportionate share of the pilot districts' students located through electronic linkages to the Coordinating Board's master enrollment files because of its proximity to two of the pilot districts, Amarillo ISD and Hereford ISD. Of the 357 students from all the pilot districts' exit cohort found enrolled at Amarillo Community College, all but one had attended high school either in Amarillo or in Hereford. The same is true for enrollments at West Texas A&M University given its proximity to both Amarillo and Hereford. Similarly, Abilene ISD singlehandedly accounted for the disproportionate number of students from the pilot districts who enrolled at Cisco Junior College; Big Spring ISD's inclusion as a pilot district accounts for the higher than expected number of enrollments at Howard College/Big Spring Campus; Beaumont and Silsbee ISD's relative to Lamar University; United ISD (Laredo) relative to both Laredo State and Laredo Community College; Waco ISD relative to McLennan Community College enrollments; McAllen ISD and UT-Pan American (Edinburgh); Judson ISD (suburban San Antonio) *vis a vis* St. Phillips (in the San Antonio Community College District); and etc.

Because of the difficulty in using data in PEIMS to identify programs at the secondary level, the Follow-Up Director did not attempt to analyze the degree to which exiting high school seniors are likely to declare postsecondary majors in fields comparable to the programs they completed in high school. We encourage districts to use in-district information to identify secondary program completers so they can correlate that information with the majors (by CIP code) declared by their former students who enroll in a Texas public institution of higher education.

At a less detailed level, analysis of data from these non-representative districts does produce information that secondary program administrators should find useful. Namely, the type of education and training program college/university-bound students complete in high school may determine the type of institution and type of major they chose at the post-secondary level. As a single snapshot, the results reported in the tables on the next page may not tell us much. However, they should serve as a baseline for comparisons over time as the information is gathered during subsequent longitudinal waves. As more approved Tech Prep programs are offered at community/technical colleges, will the percentage of Tech Prep high

school completers who enroll in community/technical colleges increase in subsequent cohorts? Will the percentage choosing Tech Prep postsecondary majors increase? What happens if an articulation agreement increases the amount of college credit that can be earned by a student who completes a high school Tech Prep program? What happens as the logic of Tech Prep is naturally extended to included pursuit of advance training at the baccalaureate and post-baccalaureate degree levels? In their first semester at an institution of higher education, a disproportionate number of students have no declared major or declare themselves to be Liberal Arts majors.¹⁰ As their postsecondary education and training becomes more sharply focused after one or more additional semesters on campus, do the "undeclared" and Liberal Arts majors "find a home" in a major closely related to the program of studies completed in high school? As confusion is eliminated and greater consistency is achieved in the coding of secondary Tech Prep students, do clearer patterns emerge in their postsecondary education and training choices? As high school career counselors acquire more knowledge about the post-secondary articulation options available to students through Tech Prep, do students' choices of postsecondary institutions and majors change? Has there been a discernable difference in the high school course-taking behavior and selection of college majors since Texas Quality Work Force Planning Committees began publishing regional target occupations lists and disseminating those lists to school districts in their regions?

**TYPE OF POSTSECONDARY INSTITUTION CHOSEN BY COLLEGE OR
UNIVERSITY-BOUND STUDENTS IN THE PILOT DISTRICTS'
1993-1994 EXIT COHORT**

Type of education and training completed during high school	Number of subjects located in higher ed match	Type of Postsecondary Institution Selected		
		Com/Tech College	University	Pub. Health Sci.
Predominantly academic (VocEd indicator = 0 or 1)	10,085	46.2%	52.7%	0.6%
Completed Coherent Voc Ed Sequence (Voc Ed indicator = 2)	1,821	56.6%	42.9%	0.5%
Completed Tech Prep program (Voc Ed indicator = 3)	340	69.7%	30.3%	0.0%

**TYPE OF POSTSECONDARY MAJOR CHOSEN BY COLLEGE
OR UNIVERSITY-BOUND STUDENTS IN THE PILOT DISTRICTS'
1993-1994 EXIT COHORT**

Type of education and training completed during high school	Number of subjects located in higher ed match	Type of Postsecondary Major Selected		
		Academic	Vocational	Tech Prep
Predominantly academic (VocEd indicator = 0 or 1)	10,085	87.3%	10.9%	1.9%
Completed Coherent Voc Ed Sequence (Voc Ed indicator = 2)	1,821	28.2%	14.3%	2.6%
Completed Tech Prep program (Voc Ed indicator = 3)	340	75.9%	15.9%	8.2%

EMPLOYER FOLLOW-UP SURVEY ON THE PILOT DISTRICTS' 1992-1993 EXITING SENIOR COHORT

During the 1994-1995 Program Year, the Automated Student and Adult Learner Follow-Up System contracted with Dr. Jim F. Reed, d/b/a Texas Student Information System (TEXSIS) to conduct an employer follow-up survey. Seed records were obtained by the Texas SOICC from the Texas Education Agency for the 25 pilot school districts' 1992-1993 cohort. Before transferring the seed records to TEXSIS, the SOICC matched them to the Texas Employment Commission's Unemployment Insurance wage records. If a match on Social Security numbers in the two files was found, employer contact information was appended to the student's file. (See Appendix G.4) As a result of this match, the SOICC identified the following as employed in jobs covered by the state's Unemployment Compensation Act during the Fourth Quarter of 1993:

- 14,882 seniors who graduated in 1993; and
- 1,940 subjects who had attained senior status but had no PEIMS graduation indicator.

The pilot districts' employed students' records were combined with employed student records from community and technical colleges and from East Texas State University. For each firm that had employed one or more students from any of those educational institutions, a single survey instrument was printed listing all former students employed by the firm and those students' Social Security numbers for cross-reference. By combining the public education pilot districts' records with those from the community/technical colleges and East Texas State University, this single survey reduces employers' survey burdens. Employers were asked to supply occupational titles for each of the former students they employed and the zip code for the work site where each performed his/her job. Employers also were asked to indicate whether each former student listed on the survey instrument had been employed full time during all of the Fourth Quarter of 1993. (Appendix G.5 contains a copy of a sample employer follow-up survey form. Appendix G.6 contains the employer follow-up survey cover letter. Appendix G.7 contains the employer survey response output file format.)

Twenty-four occupations accounted for the employment of 62% of all the exiting seniors from the pilot districts' 1993 exit cohort (as listed on the following page). Because the TEA's course coding system does not facilitate program level analysis and because, conceptually and operationally, training-relatedness scores are derived from a program-to-occupation crosswalk, it is not possible at this time to determine whether specific secondary education programs succeeded in placing students in training-related jobs. While various parties, including the State Comptroller and members of the State Legislature, have questioned the linkages between secondary vocational training and high wage job placements, we can not provide the answers they demand unless the TEA revises its coding structure to permit program-level analysis. While it has voiced recommendations repeatedly on this issue, the Texas SOICC has no authority to implement the necessary changes.

Results of the employer follow-up survey will be supplied to the participating school districts. If the pilots can use other information in their own in-district data systems (not reported to PEIMS) to identify the programs from which their former students exited, they will be able to make their rough determinations of training-relatedness. No purpose would be served at this point by comparing the results of the pilot districts' analyses because there are no standard program definitions in use across all districts and because each district would be at liberty to use its own (non-standard) methodology for assessing the degree of training-relatedness.

**OCCUPATIONS FILLED BY FORMER STUDENTS FROM PILOT DISTRICTS
DURING THE FOURTH QUARTER OF 1993
(1992-1993 COHORT OF EXITING SENIORS)**

OCCUPATION	% of Employed Students in the Exit Cohort	OCCUPATION	% of Employed Students in the Exit Cohort
Retail Salesperson	10.4%	Counter/Rental Clerks	1.5%
Cashiers	8.3%	Child Care Workers	1.4%
Food Preparation Workers	5.0%	Cooks, Restaurants	1.3%
Waiters/Waitresses	4.2%	Street Vendors/Solicitors	1.3%
Food Service Workers	3.5%	Sales Workers (n.e.c.)	1.3%
Helpers/Laborers	3.3%	Hand Packagers	1.2%
General Office Clerks	3.0%	Hosts/Hostesses (Restaurants)	1.2%
Freight/Stock Movers	2.1%	Recreation Attendants	1.2%
Stock Clerks, Sales	2.1%	Janitors/Cleaners	1.1%
Receptionists	2.1%	Secretaries (n.e.c.)	1.1%
Food Prep Workers (Fast Foods)	1.9%	Business Service Agents	1.0%
Counter Attendants	1.5%	Sales Supervisors	1.0%

No other OES-coded occupation accounted for 1% or more of the jobs held by former students from the pilot districts. All other occupations combined represented 38% of the cohort's employment.

No effort was made to compute average earnings by occupation for employed former students from the pilot districts. Occupational wages paid in any given pilot district may vary significantly from those paid in other pilot districts and across the state. Pilot districts are encouraged to rank order the occupational earnings of their former students who were found employed full time/full quarter in order to provide more detailed information to current students through career counseling. Neighboring pilot districts (such as Ysleta and El Paso; Fort Worth and Arlington; or Aldine and Cypress-Fairbanks) may want to compare occupational earnings among their former students.

Information from the full-time/full quarter indicator provided by employers who responded to the survey was used to determine annualized salaries. The calculation (4 times reported quarterly earnings) was applied only to data for former students reported to be employed full time/full quarter. By performing the same calculation on data for former community and technical college students employed full time/full quarter, we can make meaningful comparisons of earnings capacity by level of education attained.

**ANNUALIZED EARNINGS AMONG THOSE EMPLOYED FULL-TIME
DURING THE FULL FOURTH QUARTER OF 1993
BY LEVEL OF EDUCATION ATTAINED**

LEVEL OF EDUCATION	ANNUALIZED EARNINGS OF THOSE EMPLOYED FULL TIME/FULL QUARTER
Associate Degree	\$ 22,796
Community/Technical College Certificate	\$ 16,824
High School Diploma	\$ 9,104
No record of High School Graduation in PEIMS	\$ 8,424

These findings suggest that most students should be advised to persist in their efforts to obtain education and training beyond high school. Assuming the U.S. Department of Health and Human Services' definition of poverty or "*family wage*", a person would have to earn \$14,350 per year to support a family of four adequately. While average earnings for college certificate and Associate degree holders are above this federal definition of poverty, neither the high school graduates nor those having no record of graduation had earnings on average that exceeded the poverty level. An income of \$8,000 to \$10,000 per year may look attractive to an adolescent who still lives with his/her parents and who has no family to support but such limited earnings will not be sufficient to meet the financial burdens likely to be encountered by most high school exiters by their early to mid-twenties.

Recommendations for In-District Analysis

School districts are encouraged to break down their own former students' annualized earnings by type of program completed (e.g., by voc. ed. indicator code and by "gifted" indicator code), gender, ethnicity, graduation type, etc. If available in-district program level information is sufficient to determine the training-relatedness of job placements, comparisons should be made between the earnings of those who were placed in training-related jobs to the earnings of those placed in jobs unrelated to the training they received.

The employer follow-up survey contractor did no analysis on the worksite zip codes reported by employers for former students from the pilot districts. The chief question local administrators can answer with these data is: Did our former students find jobs in this area? "Area" can be defined conceptually as: within the school district; within the county; within the Quality Work Force Planning (QWFP) region; Council of Governments (COG) region; JTPA Service Delivery Area (SDA); or the Comptroller's Uniform Substate Service Regions (USSR). The SOICC can supply lookup tables which identify the various regions (except the individual school districts) by the Zip codes they include. Each school district should identify the Zip codes in the area it serves. That information can then be used to construct its own lookup table for use in determining in-district versus out-of-district job placement rates. That information also serves as the entre into the Zip code-based regional lookup tables provided by the SOICC.

SERVICES TO HIGHER EDUCATION

Perkins Committee of Practitioners

The Automated Student and Adult Learner Follow-Up System operated by the Texas SOICC evolved from the efforts of community and technical colleges to collect the data they needed for accreditation reviews, state and federal compliance reporting, and management for continuous program improvement.¹¹ In the 1992-1993 Program Year, the Texas SOICC piloted the use of more efficient record linkage techniques and an employer follow-up survey on a large scale to improve data collection on behalf of the community and technical colleges. In Program Year 1993-1994, the Texas SOICC provided follow-up services to all public institutions under the aegis of the Community and Technical College Division of the Higher Education Coordinating Board. Efforts to continuously improve those services were lead by a Steering Committee that evolved from the Perkins Committee of Postsecondary Practitioners chaired by Dr. John Grable, President of Brazosport College.

While the Follow-Up System largely took its direction from the Steering Committee, the relationship between follow-up and the Committee of Practitioners was reciprocal. The Follow-Up Director was invited to attend the Committee's meetings. The Follow-Up Director kept the Committee apprised of actions taken by the Texas Council on Workforce and Economic Competitiveness's (TCWEC) Subcommittee on Performance Measures and Evaluation and render advice and technical assistance to the Committee of Practitioners as they contemplated action items related to higher education performance measures and standards. Under such an arrangement, the Follow-Up System could test the feasibility of acquiring data and/or doing calculations under proposed performance measures before the Committee forwarded recommendations to the Higher Education Coordinating Board. The arrangement also served to minimize duplication of effort and improve articulation with TCWEC actions.

In Program Year 1993-1994, the Follow-Up Director continued to serve as a resource person to the Perkins Committee of Postsecondary Practitioners. The chief performance measurement issues before the Committee during the Program Year involved defining "*marketable skills achievers*;" and devising a supplemental follow-up process. The Follow-Up Director was invited to serve on the Marketable Skills task group chaired by Dr. Richard Bailey. The Follow-Up Director also was invited to work with Dr. Stan Adelman (Amarillo College), Dr. Mike Green (North Harris/Montgomery County Community College District), Dr. David Preston (Brazosport College), and Coordinating Board staff on recommendations for a supplemental follow-up process.

Marketable Skills Achievers

While no one disputes the proposition that institutions of higher education ought to be held accountable for the outcomes achieved by their graduates, the issue of accountability for the results achieved by those who exit without a college credential is more controversial. Higher education practitioners are searching for ways to explain the "value added" through the college experience for those who exit early. The issue is an important one because only a small portion of students who enter higher education for the first time at a community or technical college graduate with a degree or certificate from the same college. Some are forced by grades or circumstances to drop out or "stop out." Some enroll to receive remediation and exit without an award because they have achieved their goals. Some transfer to another community/technical college or to a university.

Federal regulations under the Perkins Act allow states to hold educational institutions accountable for "marketable skills achievers." While *marketable skills achievers* are to be a subset of all early exiters, each state is at liberty to establish its own operational definition. Anecdotal examples abound. In the Houston area, for example, Chemical Technicians were in such high demand by refineries during the oil boom that students with good grades in related majors were recruited from the community and technical colleges for high wage jobs before they could complete a certificate or AAS degree program. A simple approach would be to define a "marketable skills achiever" as any student who, despite exiting without a certificate or degree, was found to be employed. Variations of that simple definition might add that to be counted the occupational employment had to be *training-related* and/or the occupational wage had to exceed some standard. But even with such variations, that simple approach is tautological. Some outside observers would assert that educators inflate their institutions' success scores by "volunteering" to count only those former students known to have achieved successful outcomes while at the same time ignoring those students on whom as many public resources were spent but for whom no returns on the investment can be documented. The *Marketable Skills Achiever* task group was charged by the Committee of Practitioners with the responsibility for recommending a definition based on attributes of a student's college education and training rather than what that student achieved after exiting the institution. Under that constraint, the concept of "marketable skills achiever" should have some capacity to predict post-exit successes without being tautological. To make it clear that the forthcoming definition would not be tautological, the concept itself was given a new name, "significant skills achievers."

The task group considered defining "significant skills achievers" in terms of some critical threshold of college credit hours completed (e.g. 12 credit hours) with some degree of success (e.g., minimum grade point average of 2.5 or 2.8). Inclusion of some minimum grade point average was advocated in order to spare the institution from being held accountable for the results (or lack of results) achieved by students who did not have the aptitude or failed to put forth the effort to benefit from the education and training being provided. (To combat any perverse incentive that might follow from limiting a performance measure in such a manner, other measures might have to be imposed to ensure that adequate attention was paid the

advising process to guide students towards majors that best fit their aptitudes and measures to ensure that institutions made bona fide efforts to improve the performance of students at risk of earning low grades.)

The recommendation for including a minimum GPA went forward to the Committee of Practitioners with one caveat. Because the Coordinating Board does not maintain information about grade point averages in its central files, certification of "*significant skills achievers*" would have to be the responsibility of the individual institutions. The Coordinating Board would be responsible only for creating a field in its central files to flag those students certified to them by the institutions as "*significant skills achievers*."

The task group had more difficulty in establishing a single threshold of credit hours completed that could be considered critical across all majors. For education and training programs related to licensed occupations (e.g. Nursing or Cosmetology), the accumulation of twelve credit hours may not be critical or significant because completion of the entire program is required before the student can take the licensure examination. In other fields, one or two courses (short of 12 credit hours) may suffice. For example, students in automotive technology may find employment opportunities open to them after completing courses in Automotive Electronics.

Because the critical threshold for credits accumulated would vary from one field of study to the next, the task group recommended that the Committee of Practitioners let instructors and administrators from each field establish program-by-program guidelines for identifying "*significant skills achievers*." The task group made its recommendations and the Committee of Practitioners took them under advisement. Before it could make recommendations to the Coordinating Board on this issue, the Committee of Practitioners' commission expired.

The issue is kept alive in this follow-up report because action probably will be taken in Program Year 1995-1996 even in the absence of an official recommendation from the now-dissolved Committee of Practitioners. The issue is integral to the discussion of "*return on investment*" as one of the performance measures under the TCWEC's Strategic Plan for Workforce Development. The TCWEC's Performance Measures and Evaluations task group may turn to the Coordinating Board and to the Follow-Up Director for advice on that related issue. The report on the findings of *Marketable Skills Achiever* task group by Dr. Bailey can help shape those forthcoming discussions.

Supplemental Follow-Up

The Automated Student and Adult Learner Follow-Up System has a limited number of data sharing agreements in place. While these agreements provide access to information on the outcomes achieved by more than 80% of the exiting community and technical college cohorts in each of the preceding three years, the limitations of automated follow-up have caused some practitioners to complain. Most notably, current data sharing agreements do not provide access to information about former students who become self-employed, find employment outside Texas, enroll in a private institution of higher education, or enroll in an institution of higher education outside Texas. Educators and administrators from institutions on the state's perimeter and from those located in close proximity to private institutions complain that, by failing to document a substantial (but unknown) portion of the successes of their former students, the Automated Follow-Up System puts them at risk of failing their performance standards. The Committee of Practitioners recommended and the Coordinating Board agreed that:

- institutions of higher education ought to be allowed to conduct supplemental follow-up on those not located through the automated system; and
- institutions of higher education ought to be allowed (subject to audit and verification) to be given credit for the successes of their former students that could be documented through the supplemental process.

A task group was charged with the responsibility for devising the supplemental follow-up process. Drs. Adelman, Preston, and Green worked to develop a scanable form that could be used to collect data through surveys mailed to the last known addresses of students not located through the automated follow-up systems electronic linkages. Higher Education Coordinating Board staff worked to develop policies regarding audit, verification and acceptance of supplemental follow-up data (Dr. Molly Boyd) and processes for generating exceptions lists¹² (principally Ruben Garcia). The Follow-Up Director was given the responsibility for developing software to automate the processing of supplemental follow-up data. Ruben Garcia subsequently left the Coordinating Board to work for the Texas SOICC where he assisted Colin Atobajeun in writing the supplemental follow-up software according to the design specifications provided by the task group. (Sample menus and data entry screens are provided in Appendix H.)

Other Perkins Committee Activities

The Perkins Committee also took it upon themselves to make recommendations to concurrently operating committees addressing performance measures for Institutional Effectiveness, Adult Vocational Education, and compliance with federal State Post-secondary Review Entity (SPRE) legislation. While these topics were outside the scope of the Committee of Practitioner's purview, Dr. Grable (with the permission of the chairpersons of the concurrent committees) scheduled joint meetings to ensure that all pertinent information was exchanged regarding issues which cut across the committees' boundaries.

Institutional Effectiveness

An *ad hoc* committee on Institutional Effectiveness was convened to help clarify the criteria Coordinating Board staff would use when they made site visits at public community and technical colleges. Whereas the Committee of Practitioners dealt largely with outcome measures for programs funded in part with Perkins federal dollars, the Institutional Effectiveness group contemplated access, process, output, and outcome measures for all programs under the aegis of the Community and Technical College Division. To the extent that the Committee of Practitioners had already helped the Coordinating Board put in place a system for collecting data on outcomes also considered desirable by the Institutional Effectiveness group, information was exchanged to avoid duplication of effort and disarticulation between two sets of requirements to be imposed upon institutions.

Adult Vocational Education

At the request of the Steering Committee and the Committee of Practitioners, the Automated Follow-Up System had attempted to determine the results achieved by former Adult Vocational Students from community and technical colleges that volunteered to participate. That pilot test was unsuccessful because there was little consistency in the way community and technical colleges maintained Adult Vocational students' records. (Whereas the Coordinating Board requires community and technical colleges to report individual level reporting for all regular programs, they require aggregate level reporting on Adult Vocational programs. Therefore, each institution was left to develop its own record keeping process to track its Adult Vocational students.)

With nationwide attention on accountability in education and concern for the return on investment for all dollars spent on education and training, Adult Vocational programs were under increasing pressure to document the results achieved by their former students. The Coordinating Board convened a committee of Adult Vocational Education administrators and practitioners to determine what steps should be taken. Dr. Grable (of the Committee of Practitioners) and Dr. Ruben Torres (of the Adult Vocational Committee) co-chaired a joint meeting where findings based on the attempted follow-up of Adult Vocational students could be explained by the former for use by the latter as a point of departure.

State Postsecondary Review Entity

As part of the nationwide attention on accountability in education and growing concern for the return on investment of public dollars in education and training, Congress passed an act requiring each state to establish an entity (SPRE) to review the performance of postsecondary institutions (both public and private) to ensure that those receiving federally-guaranteed student loans are being effectively served. Reviews were to be triggered if the student loan default rate at an institution exceeded 25%. Among other things, each SPRE was to determine the training-relatedness of job placements for students exiting the institutions under review. Federal regulations attached to SPRE legislation recommended that SPREs use the NOICC's CIP-to-OES crosswalk in making those determinations.

In Program Year 1992-1993, the Automated Student Follow-Up System used the NOICC crosswalk in determining the training-relatedness of job placements among community and technical college completers. Practitioners objected that the NOICC crosswalk was incomplete and did not fully represent education and employment practices that might be unique to Texas. In response to valid complaints, the Automated Student Follow-Up System made a concerted effort to update the crosswalk and to validate it to current practices in Texas.¹³

The Committee of Practitioners approved a resolution recommending that the Texas SPRE use the Texas-validated CIP-to-OES crosswalk rather than the basic tool from the NOICC in determining the degree of training-relatedness for job placement achieved by former students of institutions under review. That resolution (along with supporting evidence from prior Program Years' follow-up) was forwarded to the ad hoc committee charged with responsibility for establishing Texas SPRE rules. While a resolution by the Committee of Practitioners was not binding on the SPRE task group, the later adopted the recommendation.

Congress has since dismantled the SPRE legislation. Nonetheless, the issue is being kept alive in this report because the concept of training-relatedness remains an integral part of the national discussion of accountability in education and return on investment. The Automated Follow-Up System continues its efforts to update the Texas-validated CIP-to-OES crosswalk annually by soliciting educators' opinions and by handling challenges to specific determinations of training-relatedness in an objective, detached manner. The Texas SOICC also has announced plans for Program Year 1995-1996 to formally solicit the opinions of employers to further enhance the validation of the Texas version of the crosswalk.

RESULTS OF HIGHER EDUCATION FOLLOW-UP

RESULTS OF MATCHING DONE ON THE COMMUNITY AND TECHNICAL COLLEGES' 1993-1994 EXIT COHORT

The Texas SOICC received seed records from the Higher Educating Coordinating Board on all students who exited Texas public community and technical colleges in Program Year 1993-1994. (The higher education seed record is provided in Appendix G.2) Those records were matched back to the Coordinating Board's master enrollment files to determine which students had transferred to another community or technical college and to determine which had enrolled in a public university in Texas. (The higher education match output file format is listed in Appendix G.3). The higher education seed records also were matched with the TEC's UI wage records to determine which former students were employed in a job covered by the Texas Unemployment Compensation Act. (The TEC UI wage record match output file format is listed in Appendix G.4.)

Of the 410,328 former students in the 1993-1994 community/technical college exit cohort, successful outcomes were documented through these electronic linkages for 353,602 individuals (86.2%). Slightly more than half (58.4%) were found to be employed in a job covered by the state's Unemployment Compensation Act; 21.4% (87,693) were working and continuing their training at another Texas public institution of higher education; 26,449 (6.4%) were employed in Texas but not located at another Texas public institution of higher education. The Automated Follow-Up System had slightly better success in using record linkage techniques to identify outcomes for graduates (87.1%) than for those who had declared a major during the 1993-1994 school year but who did not return to the same institution for the Fall Semester of 1995 (86.5%). The most difficult to locate through automated record linkages were those who had not declared a major before exiting a public institution of higher education (15.2% not located). Community and technical college graduates were slightly more likely to continue their education and training at another institution of higher education in Texas than were the non-returning declared majors and the non-returning "undeclareds."

Type of major does seem to make a difference in the kinds of gross outcomes (employed and/or continuing higher education) achieved by graduates and non-returning students at the first point in time that they were subjects in the SOICC's follow-up study. (We would hypothesize, however, that at the third or fifth year interval in a longitudinal design the percentage continuing to pursue additional education and training would decline across all categories while the percentage found to be employed would increase among all groups. The relative benefits of additional education and training would at those intervals be better measured not in terms of gross outcomes but, rather, in terms of the correlations between credentials earned or level of education attained and earnings gains, employment retention over time, and/or career advancement.)

OUTCOMES ACHIEVED BY THE 1993-1994 COMMUNITY/TECHNICAL COLLEGE EXIT COHORT BY TYPE OF MAJOR AND GRADUATION TYPE

OUTCOME	FORMER ACADEMIC STUDENTS			FORMER TECHNICAL & TECH PREP STUDENTS*		
	Graduates	Non-Returners	Undeclared	Graduates	Non-Returners	Undeclared
Employed Only	30.3%	51.7%	56.5%	66.9%	69.8%	59.7%
Employed and Additional Higher Ed	44.0%	27.3%	22.4%	15.2%	12.0%	17.2%
Additional Higher Education Only	14.6%	8.4%	6.5%	4.4%	3.2%	6.0%
Not Located	11.2%	12.6%	14.6%	13.5%	14.9%	17.0%
Total %age	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

* As of the 1993-1994 school year, community and technical colleges across Texas had not offered enough approved Tech Prep programs for a sufficient length of time to produce large numbers of Tech Prep graduates or program leavers. Therefore, the 401 Tech Prep students in the 1993-1994 exit cohort are combined with Technical students for the purpose of analysis.

Because each public community and technical college is required under the rules of the regional accreditation body to have at least one half-time institutional researcher, the outcomes data acquired by the Texas SOICC were divided by institution and returned to a single point of contact at each institution by staff at the Higher Education Coordinating Board. The Coordinating Board also provided institutional researchers with instructions for using those data in preparing compliance reports, institutional effectiveness reports, and institutional data profiles. These various institution-generated reports contain more detailed analysis of outcomes broken down by program and by assorted demographic and student attribute variables. (Such reports must be obtained directly from the institutions or the Coordinating Board.)

Coordinating Board staff also supplied each institution with a composite profile of statewide outcomes. Institutional researchers use these statewide composites for comparative purposes; i.e., to put the performance outcomes of their institution and its programs in perspective against a baseline of statewide outcomes. Institutional researchers also are encouraged to track the performance of programs or subpopulations of students over time. The practice of comparing the performance of institutions and programs (to baseline statewide data or to prior cohorts' achievements) helps institutional researchers identify exemplary programs and may give early warning to programs in need of revision.

Raw success rates on gross outcome measures, especially when compared to flat composite statewide standards, do not provide sufficient detail for data-driven program management for continuous improvement. A program which achieves 90% successful outcomes clearly exceeds Coordinating Board standards (set at 85%) but might not be an exemplary program if all similar programs across the state achieve at least a 95% success rate.

Conversely, a program which barely exceeds the Coordinating Board's 85% standard might be considered exceptional if it meets the standard while:

- a) serving a disproportionate number of economically or educationally disadvantaged students;
- b) operating in a labor market with a high unemployment rate; and/or
- c) serving a community located at a relatively long distance from senior institutions of higher education.

Serious consideration is being given to the adoption of adjustment procedures in program evaluation based on a model developed by the JTPA system.¹⁵

RESULTS OF THE EMPLOYER FOLLOW-UP SURVEY CONDUCTED ON FORMER COMMUNITY AND TECHNICAL COLLEGE STUDENTS FROM THE 1992-1993 EXIT COHORT

The Texas SOICC received seed records from the Higher Educating Coordinating Board on all students who exited Texas public community and technical colleges in Program Year 1992-1993. The Texas SOICC also received 25,304 seed records on the preceding school year's exit cohort for inclusion in the employer follow-up survey as the second wave in a longitudinal design. (The higher education seed record is provided in Appendix G.2) Prior to transmitting the higher education seed records to the employer follow-up survey subcontractor, the Texas SOICC facilitated a match of those records with the TEC's UI wage records to provide employer contact information on former students found to be employed in covered employment in Texas. The TEC match resulted in the acquisition of employer addresses for 27,240 former students from the 1992-1993 exit cohort and for 25,304 former students from the 1991-1992 exit cohort longitudinal design. (See Appendix G.4 for the UI wage record match output file format.) Higher education's records were merged with records from the pilot school districts into a single master file. Each employer who had hired a former student from any of the participating entities was mailed a follow-up survey. Employer responses were recorded and coded. General statewide results were tabulated and each institution was provided its own data set for more in-depth analysis.

Occupational Employment Among Former Students in the 1992-1993 Community/Technical College Exit Cohort

Eighteen specific occupations account for the employment of more than half of the 1992-1993 community and technical college exit cohort. Six of the eighteen are in the Health Care industry.

**OCCUPATIONAL EMPLOYMENT AMONG FORMER COMMUNITY AND
TECHNICAL COLLEGE STUDENTS (1992-1993 EXIT COHORT)**

OCCUPATIONAL TITLE	%age of Occupational Employment Reported in Response to Follow-Up Survey
Registered Nurse	15.5%
Licensed Vocational Nurse	13.1%
General Office Clerk	2.3%
Radiological Technician	1.8%
Secretaries (not elsewhere classified)	1.8%
Respiratory Therapist	1.7%
Retail Salesperson	1.7%
Patrol Officer	1.6%
Drafter	1.6%
Teacher (not elsewhere classified)	1.3%
Auto Mechanic	1.2%
Security Guard	1.2%
Dental Hygienist	1.1%
Vocational Teacher	1.1%
Clerical Supervisor	1.0%
Bookkeeper/Accounting Clerk	1.0%
Helper/Laborer (not elsewhere classified)	1.0%
Cashier	1.0%
All other occupations combined	49.0%

Among those former students who were employed full time during the full Fourth Quarter of 1993, there appears to be a strong relationship between the training-relatedness of their employment and their earnings. On average those who were employed in training-related jobs¹⁶ had annualized earnings of \$21,568 compared to the average of \$17,016 annualized earnings of those employed in unrelated occupations. It also appears that the tradition ethnic and gender based earnings gaps are reduced when Black and female students find training-related employment. Among Hispanic former students, however, the gap widened. Additional data (outside the purview of this study by the SOICC) would have to be gathered from employers to explain why the earnings gap widened for Hispanic former students in these pilot disdtricts' exit cohort.

**AFFECT OF TRAINING-RELATED EMPLOYMENT ON EARNINGS GAPS
ETHNICITY AMONG FORMER COMMUNITY/TECHNICAL
COLLEGE STUDENTS IN THE 1992-1993 EXIT COHORT**

ETHNICITY	Column B Avg Annualized Earnings for Those Employed in Training- Related Occptn.	Column C \$ Gap to Avg Annualized Earnings for T-R Employed Whites	Column D Avg Annualized Earnings for If Not Employed in Training- Related Occptn.	Column E \$ Gap to Avg Annualized Earnings for Non-T/R Employed Whites	Change in Earnings Gap Relative to White Former Students if T/R Employed (Column E / Column D) - 100%
White	\$ 22,408	N.A.	\$ 17,200	N.A.	N.A.
Black	\$ 21,096	\$ 1,312	\$ 14,680	\$ 2,520	- 47.9%
Hispanic	\$ 18,608	\$ 3,800	\$ 14,036	\$ 3,164	+ 20.1%

**AFFECT OF TRAINING-RELATED EMPLOYMENT ON EARNINGS GAPS
GENDER AMONG FORMER COMMUNITY/TECHNICAL
COLLEGE STUDENTS IN THE 1992-1993 EXIT COHORT**

GENDER	Column B Avg Annualized Earnings for Those Employed in Training- Related Occptn.	Column C \$ Gap to Avg Annualized Earnings for T-R Employed Males	Column D Avg Annualized Earnings for If Not Employed in Training- Related Occptn.	Column E \$ Gap to Avg Annualized Earnings for Non-T/R Employed Males	Change in Earnings Gap Relative to Male Former Students if T/R Employed (Column E / Column D) - 100%
Male	\$ 22,596	N.A.	\$ 118,872	N.A.	N.A.
Female	\$ 20,872	\$ 1,724	\$ 13,704	\$ 5,168	- 66.6%

These findings make it particularly important to look at the rate of training-related job placements program-by-program. The concept of training-relatedness has long been considered integral to the intuitive standard by which the general public accounts for a return on the investment of its tax dollars in education and training. The concept of relatedness to occupational employment probably weighs heavily in students' minds as they try to make rational choices about training programs that will put them on a pathway to high skill/high wage careers. These findings suggest that training-relatedness of job placement also may be an important key to equitable outcomes for women and minority groups.

**TRAINING RELATEDNESS AND ANNUALIZED EARNINGS
BY MAJOR (CIP) FOR FORMER COMMUNITY/TECHNICAL COLLEGE
STUDENTS IN THE 1992-1993 EXIT COHORT**

Annualized Earnings for Those Former Community and Technical College Students Employed Full-Time During the Full Fourth Quarter of 1993	% of Training-Related Placements Achieved for CIP Program Statewide	
	Greater than 80% training-related placements	Less than 40% training-related placements
More than \$20,000/Year (listed in descending order by average annualized earnings among former community and technical college students employed full-time/full quarter during the Fourth Quarter of 1993)	Registered Nursing Chemical Technology Electrician Dental Hygienist Quality Control Technology Respiratory Therapy Technology Diagnostic Sonography Radiological Technology Medical Lab Technology Electrical/Electronic Drafting Occupational Therapy Assisting	Real Estate Manufacturing Technology Electromechanical Technology Computer Engineering Tech.
\$ 16,000 or less per year (listed in descending order by average annualized earnings among former community and technical college students employed full-time/full quarter during the Fourth Quarter of 1993)	Admin. Asst/Secretarial Sci Meatcutter Child Care Management	Accounting Technology Aircraft Pilot (Professional) Data Processing Technology Computer and Info Science Business Computer Facilities Ops Office Supervision Medical Assistant Nursing Assistant Sign Language Interp.

The table on the prior page does not exhaust the list of all majors (at the two digit CIP level) declared by former community and technical college students from the 1992-1993 exit cohort found employed full time during the full Fourth Quarter of 1993. Outcomes for the remaining majors had training-related employment rates between 40% and 80%. Average annualized earnings for the remaining majors clustered in the range of \$12,000/year to \$24,000/year with a few notable exceptions. Two majors had moderate rates of training-related employment and average annualized earnings in excess of \$32,000/year: Operations Management/Supervision and Nuclear Medical Technology. Two other majors had moderate rates of training-related employment with average annualized earnings in excess of \$28,000/year: Instrumentation Technology and Occupational Safety and Health Technology. On the other end of the spectrum, three majors with moderate rates of training-related employment had average annualized earnings of less than \$12,000/year: Radio and Television Broadcasting, Dental Assisting, and Information Processing/Data Entry Technology. General Office/Clerical and Typing Service majors were "on the cusp" with a training-related employment rate slightly over 70% and average annualized earnings slightly above \$12,000/year.

Additional research also is warranted particularly to explain four of the entries in the cell containing CIP codes with training-related placements below 40% and annualized occupational earnings below \$16,000.

- a) Aircraft Pilots (Professional): Despite the CIP description, did students enroll in these programs for avocational reasons with no intention of securing related jobs? Do commercial air carriers prefer to hire former military pilots? Do commercial air carriers prefer to do their own pilot training?
- b) Data Processing, Computer and Information Science Technology, and Business Computer Facilities Operations frequently appear as training programs related to occupations on state and regional target lists. Were those fields put on such lists because simply because they are associated with high technology industries without regard for occupational demand or on the false assumption that every occupation in a high tech industry is paid a high wage? Is there a flaw in the automated data coding process used by TEXSIS which, by inappropriately assigning NEC (not elsewhere classified) codes to non-OES payroll titles without direct employer contact and verification, cause us to overlook viable training-to=employment relationships? Are there trends among data processing and computer operations firms that are too recent to be captured by the historic data which by-and-large drive the regional planning process? (For example, with worldwide connectivity, do data processing firms find it more economical to have their work done remotely by cheaper labor outside the United States? With the emergence of LANs and WANS and the growing capacity of stand alone desktop computers, are firms decentralizing their business computing and dismantling mainframe operations centers?)

This outcomes-by-major at the state level is the kind of information students and workforce development program participants need as they make career decisions. Once they make career choices, they must select appropriate training-related programs. To make informed choices when selecting training programs, students and workforce development system participants also should have information about the outcomes achieved by recent completers and leavers of specific programs offered at specific institutions at their disposal. While such detailed information may be reported in the data profiles published by the state's public institutions of higher education, those data profiles are not widely distributed. The hard copies of the data profiles for all public institutions are seldom stored together in locations where they can be conveniently accessed by those making career choices. The institutional data profiles are not available electronically from a single source that provides user-friendly menu-driven procedures for generating comparisons across programs and institutions that would be meaningful to or engage the interest of the average student or adult learner who is wrestling with career choices and training options.

The Texas SOICC proposed a Consumer Report System to address this problem. The United States Department of Labor's Employment and Training Administration has funded that proposal with a June 30, 1996 delivery date.¹⁷

RESULTS FROM THE SECOND WAVE IN A LONGITUDINAL STUDY OF FORMER COMMUNITY AND TECHNICAL COLLEGE STUDENTS FROM THE 1991-1992 EXIT COHORT

At the end of Program Year 1992-1993, the Texas SOICC matched seed records for former community and technical college students from the 1991-1992 exit cohort. Through that match the SOICC obtained employer contact information for those former students found employed at jobs covered by the state's Unemployment Compensation Act. At the beginning of Program Year 1993-1994, contact information from the matching output file was used to generate mail surveys to employers to obtain occupationally-specific data on former students in the 1991-1992 exit cohort. At the end of the 1993-1994 Program Year, the follow-up system analyzed occupational employment among subjects in that cohort and distributed its findings through the Coordinating Board to institutional researchers at all of the state's public community and technical colleges. While the 1991-1992 exit cohort was three years old at the beginning of the 1994-1995 Program Year, they were the subjects of the second wave of a longitudinal study.¹⁸

The outcomes achieved by former students in their second year "out" were compared to the results they had achieved in their first year "out." Comparisons can be made to determine patterns of change in industry of employment, occupational employment, firm-specific retention, geographic mobility, and earnings gains.

Comparison of First-Year-Out Results to Second-Year-Out Results
Achieved by Former Community and Technical College Students
from the 1991-1992 Exit Cohort

What was the former student's employment status as of the second wave of the follow-up study relative to the first year out? (Listed in descending order by frequency of occurrence.)	As a %age of those in the 1991-1992 exit cohort for which employer responses were available from both the first and second waves		
	Entire Cohort	Technical Majors	Academic Majors
Held a job in the same region (Quality Work Force Planning)	92%	92.3%	91.3%
Held a job in the same county	88%	87.7%	87.1%
Held a job in the same city	82%	81.6%	80.0%
Held a job in the same industry (SIC)	72%	71.8%	70.3%
Had higher quarterly earnings	70%	70.0%	67.2%
Employed in the same occupation	64%	64.1%	38.4%
Employed by the same firm	61%	61.2%	61.7%
Employed in same occupation/same industry	56%	55.8%	41.8%
Employed by same firm in same occupation	48%	48.4%	38.4%

These data yield a mix portrait of relative geographic stability but employment volatility in post-exit results among former community and technical college students "two years out." In particular, for all three geographic factors (region, county and city of employment) more than three-fourths of both former Academic and Technical student continued to hold jobs in the same labor market. In the case of both former Technical and Academic majors, more than two-thirds continued their employment in the same industry. But slightly more than half stayed with the stayed in the same occupation in the same industry (that figure drops to 41.8% for former Academic majors two years out) and less than half (regardless of major type) were found employed in the same occupation in the same firm.

There does appear to be some job shopping among both former Academic and Technical majors with the former Technical majors more likely to find a similar job with another firm while the former Academic majors appear more likely to take on new jobs within the same firm. This may be evidence that Technical majors are more narrowly trained

(i.e., suited for employment in a smaller number of occupations) and are likely to make wage gains only by accruing seniority or demonstrating improved productivity with the same firm or by "*shopping their services*." On the other hand, Academic majors may be more broadly trained (though not for specific occupations). To enjoy earnings gains they may exercise more flexibility in taking on additional tasks and broader responsibilities within the firm.

In each of the scenarios above, the change in occupation (for former Academic majors) and change in firms (by former Technical students) should not be construed as instability but rather as "*career advancement*." Great care should be taken, however, in research on "*career advancement*." The term *advancement* is often value-laden. We cannot document "*career advancement*" empirically because we have no operational definitions for career pathways. We can only use proxy measure such as earnings gains or increased responsibilities as evidence of some more generalized, common sense notion of "*career advancement*." Nonetheless, more detailed analysis should be done to differentiate "*career advancement*" from less desirable kinds of change.

- What portion of those who changed jobs moved to employment in an occupation more closely related to their training? Does a move to an occupation more closely related to one's training result in an earnings gain?
- What portion of those who changed industries moved from one in decline into a growth industry?
- Of those who changed, location, industry, occupation or firm, what percentage realized earnings gains?
- Of those who had earnings gains, what portion had to change location, industry, occupation, or firm?
- Of those whose earnings changed, were the gains larger for those who accrued seniority by staying in the same occupation with the same firm or for those who changed jobs?
- Of those who had earnings gains, what percentage had gone to school while working in order to acquire additional marketable skills?
- Of those not located in Texas covered employment during the first wave (or who were employed part-time and/or continuing their pursuit of higher education), what percentage:
 - * had earned one or more postsecondary credentials at some other public institution of higher education?
 - * were found to be employed full time at the second wave?

- Of those who worked full time at covered employment in Texas at the first wave but who were not identified as working full time in Texas cover employment as of the second wave, what percentage:
 - * returned to school to acquire additional education and training?
 - * moved out of state to pursue job opportunities?
 - * changed from covered employment to self-employed status or into some other kind of work not covered by the state's Unemployment Compensation Act?
- What kinds of change patterns will be evident if the Follow-Up is funded to collect labor market outcomes data at a third interval in this longitudinal design? Is change a function of age? (That is, do younger community and technical college exiters go through several changes in the first few years out than do those who are older when they exit higher education?) Is there a typical age at which the likelihood of changing location, industry, occupation, and/or firm decreases significantly?

Institutional researchers are particularly encouraged to see if the patterns of change vary from one set of program completers to another. Is the likelihood of change greater or smaller for those trained for occupations in service, manufacturing or extractive industries? Is change more likely for those trained and placed on jobs in an urban environment? or in labor markets with high rates of unemployment? Do the probabilities for changes between longitudinal waves differ significantly among ethnic groups or between the two genders? Although such questions go beyond the scope of the Follow-Up System's mission of supplying baseline data analysis, the answers may be critical to managing programs for continuous improvement.

SERVICES TO THE TEXAS COUNCIL ON WORKFORCE AND ECONOMIC COMPETITIVENESS

Texas established a human resource investment council, the Texas Council on Workforce and Economic Competitiveness (TCWEC), under authority of Senate Bill 642. Several ad hoc task groups and permanent working committees were created by the TCWEC. The Performance Measures and Evaluation Committee and an adjunct task group of resource persons from the partner agencies studied the availability of relevant data items in existing administrative records, data collection methods, operational definitions and calculations for suggested performance measures, and benchmarking to results previously achieved as a precursor to discussing standards for each performance measure. The task group provided detailed analysis to the Committee so its members could make informed judgments when voting to recommend that specific performance measures and standards be forwarded to the TCWEC and, ultimately, to the governor for approval and adoption.

The TCWEC's Committee on Performance Measures and Evaluation did not start with a blank slate. The Coordinating Board, upon the advice of the Perkins Committee of Practitioners, already had its "85% rule" in place with "successful outcomes" operationally defined. The Texas Department of Commerce, within the parameters established by the U.S. Department of Labor's Employment and Training Administration, had developed an elaborate system of performance measures, standards, adjustments, and incentives for the state's JTPA system. The Texas Education Agency, under its system of Indicators of Academic Success and the Tri-Agency Master Plan for Career and Technology Education, had conceptually defined several performance measures. The State Board of Education and the Commissioner was in the process of establishing operational definitions of those performance measures and setting the stage to set standards before the TCWEC was formed. The Texas Department of Human Services and the Texas Employment Commission were collaborating to develop performance measures and standards within federally defined parameters for the Job Opportunities and Basic Skills (JOBS) program for AFDC recipients and for the Employment and Training Services provided to Food Stamp recipients. All of the partner agencies had independent management information systems which had been developed initially for entirely different purposes with little anticipation that the data therein might be used for cross-program evaluation.

Having considerable experience over three years in developing an integrated follow-up system to serve three of the partner workforce development agencies, the Follow-Up Director was asked to serve as a resource person to the TCWEC's Performance Measures and Evaluations Committee and adjunct task group. His principle services consisted of:

- mapping existing management information systems to determine what data were already being collected to avoid duplication of effort and to forecast the costs that would have to be incurred if any of the partner agencies/programs would be required to add other elements to their system;

- identifying common definitions on core measures and facilitating consensus building to develop common definitions where no prior agreements existed;
- where ideal measures did not yet exist, suggesting proxy measures based on existing data that could be used permanently or until new data elements could be collected;
- forecasting the consequences likely to occur if administrators changed practices in order to "*make their numbers*;"
- suggesting alternative methods for measuring desired outcomes or mixing off-setting performance measures to avoid "*perverse incentives*;" and
- recommending a cautious approach to standard setting based on benchmarking results achieved historically and the adjustments model developed by the JTPA system.

During the 1994-1995 Program Year, the task group recommended performance measures (but no standards) for gauging post program employment rates, post-program earnings, pre-enrollment/post-exit earnings gains, training-related job placements, continued pursuit of education and training, and longitudinal measures for long term outcomes such as earnings gains and employment retention over multiple post-exit intervals. The recommendations were approved by both the Performance Measures and Evaluation Committee and by the TCWEC. They were subsequently forwarded to Governor Richards and were implemented with her approval.¹⁹

At the end of the Program Year, the task group was still at work to develop measures related to program advancement, customer satisfaction, and return on investment. No recommendations were forwarded to or acted upon by the TCWEC or its Committees after June 1, 1995 because the Texas Legislature revamped the state's workforce development system, redefined the TCWEC's role, and changed the composition of the Council. Work will resume in the fall of 1995 once partner agencies have transitioned into the new Texas Workforce Development Commission (TWDC), the new Commissioners and Chief Executive Officer of TWDC have taken office, the TCWEC makes its transition to the governor's office, and the reconstituted Council is convened.

OTHER ACTIVITIES

America's Labor Market Information System

At the invitation of Dr. David Stevens (University of Baltimore) and Pat Arnold (Maryland Department of Employment and Economic Development), the Follow-Up Director was invited to represent Texas on the Maryland-led consortium created to study the use of data from UI wage records from all states in program evaluation and labor market information systems. The consortium was funded by the U.S. Department of Labor's Employment and Training Administration as one of several related projects whose joint efforts should result in the creation of an electronically accessible, standardized, and comprehensive system to be known as "*America's Labor Market Information System*" (ALMIS). Maryland and Texas were joined by Florida, Oregon, North Carolina, Washington, and Alaska as principle parties with other states and research groups (such as John Baj from Northern Illinois University) as affiliated members. The Maryland Department of Economic and Employment Development (Md DEED) serves as the grant recipient and fiscal agent for the consortium.

Principle parties met in Baltimore in February 1995 to divide the various subtasks among themselves. Anticipating that the consortium will recommend changes to state's UI wage record systems, Jay Pfeiffer (representing Florida) volunteered to lead team members in a study of employer reactions to changes that might be proposed. Robert Cottrell (North Carolina) volunteered as team leader on a study of the impact those proposed changes would have on states' UI management information systems. The Follow-Up Director will assist Florida and North Carolina gather data from Texas for those two studies.

Texas volunteered to take the lead on three subtasks. The Texas Employment Commission serves as the subgrant recipient and fiscal agent for those funds. The Texas SOICC is named as the Performing Party in the interagency agreement between Texas and Maryland with Marc Anderberg (Follow-Up Director) as the Principle Investigator on the three subtasks.

- 1) A study to identify the kinds of employment not covered by states' Unemployment Compensation Acts and to determine what alternative administrative information systems might be accessed electronically to provide outcomes data for evaluating training programs related to occupations commonly not covered in states' UI wage records.

Data collection, consisting of surveys to 50 state UI administrators and 50 State Occupational Information Coordinating Committee executive directors, will be done by the University of North Texas's Survey Research Center under the direction of Dr. James Glass and Melinda Ephraim.

- 2) A study to identify data collection and analysis techniques that can be used to empirically identify entry-level occupations with the highest probabilities for advancement along career pathways to high skill/high wage employment.

Dr. Chris King and Leslie Lawson from the Center for the Study of Human Resources at the LBJ School of Public Policy (University of Texas - Austin) will conduct a literature review and survey of best practices under an interagency agreement with the Texas SOICC.

- 3) Development of recommendations for making information from UI wage records available for use by interested stakeholders outside the UI system.

While Tom Lynch (Oregon) works on recommendations for safeguarding the confidentiality of individually-identifiable and firm-specific information in the states' UI wage records, the Follow-Up Director will work on recommendations for making UI-based data available in aggregate formats to interested stakeholders who might not be statisticians or econometricians. (This subtask assigned to Texas ultimately led to the Consumer Report Project described in the next section of this report.)

Final reports from Dr. Glass and Dr. King are due to the Texas SOICC in November. A summary of their findings and recommendations under subtask three will be submitted by the Follow-Up Director to the Maryland-led ALMIS UI consortium before December 31, 1995. The recommendations of the UI consortium, along with those submitted by ALMIS consortia members studying other aspects of labor supply and demand information, should -- **if adopted** -- improve the capacity of all states to match training supply to the demand for high skill/high wage occupational employment. The Texas Follow-Up System and its customers should be prime beneficiaries. If the envisioned ALMIS is created, the outcomes data used in program evaluations, program planning, compliance reporting, and career information delivery systems would be more complete, accurate, timely, and easier to use.²⁰

Consumer Report System for One-Stop Career Centers

The U.S. Department of Labor's Employment and Training Administration (ETA) made funds available to states on a competitive basis for planning and implementing *One-Stop* Career Centers at sites operated by local workforce development boards. One function of these centers will be to house comprehensive labor market information (LMI) systems for use by program administrators, employers, workforce development program participants, job-seekers, and etc. In this context, the definition of LMI has been expanded to include information about the availability of education and training programs within the region served by a *One-Stop* Career Center.

Each state currently has some form of an automated State Training Inventory (STI). In most states, the STI consists of a listing of programs by institution by location. Some may include current enrollments, graduation rates, and admission requirements. To be more useful in guiding informed choice²¹, the STI component of *One-Stop* LMI systems should include easy to understand reports on each education and training program's prior performance history. The ETA set aside funds for the design and development of such a Consumer Reports System (CRS). Of the six state receiving *One-Stop* implementation grants in the first round, Texas was the only state with a well developed cross-program follow-up system that generated the kind of performance history reports envisioned in the ETA's vision of the CRS. The other five first round *One-Stop* implementation states²² opted to give the lead to Texas and to support its efforts. The ETA awarded the CRS project to Texas with the Texas Employment Commission serving as fiscal agent and the Texas SOICC as the principle performing party.

The Texas SOICC, in collaboration with a multistate steering committee and in consultation with key stakeholders, will develop, test, perfect, and deliver software to automate consumer reports on education and training service providers' performance histories.²³ The Texas Follow-Up System and its customers will benefit from the CRS project insofar as it will standardize reports, automate report generation, add features to the report generator that make the information more engaging and easy to comprehend, make the reports more widely available to students and workforce development program participants, allow users to walk through a mouse-driven menu system to construct meaningful ad hoc reports to help them make informed career choices and in selecting training providers. In addition, the Texas Follow-Up Director and Jay Pfeiffer (the follow-up director in Florida) will collaborate under this grant on a field guide to automated follow-up. By distributing the field guide to other states, ETA hopes to encourage widespread implementation of the Florida-Texas follow-up model. If other states adopt the Florida-Texas model, follow-up in Texas will improve as it has access to standardized data and reports from other states for use in comparing and analyzing service provider histories. Thirdly, CRS funds will be used to develop an automated process that will make it easier for employers to participate in the validation of the CIP-to-OES crosswalk used by the Follow-Up System in making determinations of training-relatedness of job placements.²⁴

Tri-Agency Initiatives

The Tri-Agencies for Quality Work Force Planning²⁵ have funded automated follow-up in Texas with federal dollars under the JTPA and Perkins Act. Automated follow-up was one part of a larger joint effort by the tri-agencies to improve articulation of programs while avoiding duplication of effort in trying to achieve the best possible match between training supply and occupational demand in targeted industries. As the various initiative encountered obstacles, a tri-agency management team met to devise solutions. The Follow-Up Director and the Executive Director of the SOICC served as advisers to the tri-agency management team on data-related issues.

Skill Standards

At present, most information about the world of work is organized around the concept of occupations. Changes in technology and human resource management may lead to fundamental differences in the way work is performed in the future. Discrete occupations filled by full-time incumbent workers may to some degree be replaced by "spot employment" of persons on short term contracts to perform duties and tasks which cut across previously defined discrete occupations. In some industries or workplaces, demonstrated competencies on unique bundles of skills may become a more important key to employability than credentials certifying completion of occupationally specific training.

In industries or firms where occupations remain the principle unit in organizing work, concerns have been voiced that job-seekers (even with education and training credentials) might not be prepared to do the work. Employers worry that what is being certified to them by education and training institutions is that the student has accumulated sufficient seat time/clock hours to be awarded a credential and/or that the student has passed a norm-referenced test of his/her mastery of course materials. While seat time and clock hours may be important to the way accounting, human resource management, physical plant utilization, and tuition collections are done by educational institutions, they mean little to prospective employers. Seat time and clock hours accumulated only indicate that a student has had an opportunity to learn, not that the student has, in fact learned. Norm-referenced assessment indicates how well a student can perform in an artificial test situation relative to his/her classmates. It does not indicate whether the student can perform in the workplace at a level of proficiency acceptable to employers -- especially if the students are tested on course content developed without initial employer input and continuous employer validation.

A national agenda of research on skills standards is underway.²⁶ As this research produces results, employers and educators will move toward a common framework for communicating needs and expectations organized around competencies.²⁷ As this transition occurs, it will have profound affects on: how the delivery of education and training is organized; what outputs are reported by education; what kind of data elements are used to explain the labor market out-comes achieved by students after they exit education and training;

and how performance measures are defined and standards are applied in program evaluations. While the Automated Follow-Up System does its best to provide information organized around programs (on the supply side) and occupations (on the demand side), it must ready itself for transition into the forthcoming era of skills standards-based education and training program evaluations and delivery of labor market information.

To that end, the Follow-Up Director collaborated with the tri-agency management team in reviewing the current state of the art in skills standards research and in a search for a framework to use in organizing related data. The Follow-Up Director recommended, in the interim before the forthcoming Texas Skills Development Board is created, that the tri-agencies should join the V-TECS consortium²⁸ to gain access to the best available information and to spare itself from duplication of effort in research into skills standards for various occupations or clusters where other states and national organizations were already producing results. The tri-agency management team concurred and subscribed to V-TECS.

Career Major System Development

As educators adapt to employer-driven skills standards, the way education and training is delivered (and, *ipso facto*, the way educational data are collected and organized) will change. If we are to provide appropriate information to students (at the junior and senior high level) that will help them navigate the pathways to high skill/high wage careers, the framework and language of career counseling also must be redesigned. In addition to inference drawn from the skills standards research, federal School-to-Work legislation addresses the need for changes in the way we do career counseling. Federal action is likely to provide the push (mandates) and pull (incentive dollars) to move towards the organization of training delivery around majors tied to related careers. In anticipation of these inevitable changes, the tri-agencies will fund a study of educational data and coding structures in Texas public education. The Texas SOICC was awarded that grant.

The Texas SOICC's study of the existing data coding structures in light of forthcoming revisions in the way education and employment information will be communicated will result in recommendations for changes in the PEIMS that the tri-agency partners can carry forward to the State Board of Education, the Commissioner, and TEA staff. The recommendations will include plans for long range implementation as well as "*short term fixes*." While the organizational framework eventually will revolve around a common language of skills, educators and employers are likely to continue talking for the balance of this century respectively in terms of programs and occupations. The immediate problem is one of miscommunications because the course coding conventions used by public education are not easily translated into program-level information. Whereas the dialogue between educator and employers at the program-to-occupation level of translation is difficult, a dialogue between the stakeholders is even more difficult where public education cannot translate its own course-level data into program level information. (See pages 6 - 10 of this report.) Solutions for this problem will be recommended

as interim steps that should be taken immediately while developing a long range plan for transitioning to a skills-based system for organizing education and training data.

Emerging Occupations Study

As stakeholders developed strategies for matching training supply to occupational employment demands they relied on the Occupational Employment Survey (OES) for as the primary source of information about current employment patterns within growth industries and for forecasts of future changes in industrial staffing patterns. In the past, occupational employment patterns evolved slowly. Minor changes could be made in the OES coding structure at five year intervals to keep pace with the emergence of new occupations and gradually changing duties and tasks associated with existing occupations. The pace of technology change has rapidly accelerated, new theories of human resource management come in vogue rapidly and go out of fashion just as quickly, and consumer tastes seem to fluctuate more frequently.

Occupational demand is "*derivative*," that is, it changes in response to these external forces. New occupations emerge at shorter intervals and the skills required under existing occupational titles may change dramatically. The OES has not kept pace with those changes. While employers who are surveyed in the OES may tell their state employment security agency (SESA) that they have hired (or likely to hire) persons under new payroll titles, neither the SESAs nor the Department of Labor's Bureau of Labor Statistics (BLS) uses an analysis of these "*residual*" titles to drive changes in the OES data dictionary. In the absence of organized information about emerging and evolving occupations, planners and educators complain that economic development and our ability to compete globally may be jeopardized because they miss opportunities to train students for emerging high wage/high skill jobs or because they are deprived of sufficient information to keep the curriculum current for training programs related to existing occupational titles with dramatically transformed requirements.

Planners and educators rightfully insist that they be permitted to use information about emerging and evolving occupations in their local efforts to target training opportunities and to keep the curriculum current. The tri-agencies acknowledge that need but at the same time they are obligated to preserve the integrity of the planning process. There is a delicate balance between granting latitude to local planners to take hard data about emerging and evolving occupations into account without creating a loop hole in the process that allows planning to degenerate to a level where it is driven not by evidence and sound forecasting but rather by non-representative anecdotal information, rumor, and the self-interest of politically influential stakeholders. The tri-agencies have solved this dilemma by periodically funding studies of emerging occupations and permitting local boards to use the results of those studies in supplementing OES-based information in the documentation used to support their annual plans. A study of emerging occupations was last commissioned by the tri-agencies in Program Year 1991-1992.

By the spring of 1995, local planners and curriculum developers were complaining again that the most recent study of emerging occupations was out of date. Moreover, their confidence in the most recent study was low because its methodology was not explained with sufficient clarity to allow local replication and validation. Therefore, the tri-agencies commissioned the Texas SOICC to produce a new study of emerging and evolving occupations. To ensure stakeholder confidence in the results of the Texas SOICC's study, the tri-agency insisted:

- the research would be data-driven;
- the findings would be validated by employers and educators; and
- the methodology would be explained in detail and procedures would be carefully outlined for local replication and validation.

Because it had accumulated a file of payroll titles submitted by employers in response to its follow-up survey and because it had access to the comparable information from the Florida follow-up system and other state's OES residual titles, the Automated Follow-Up System was assigned the task of conducting the emerging and evolving occupations study. Its customers will be among the primary beneficiaries because knowledge of emerging occupations will improve the Follow-Up System's capacity to identify new relationships between training programs and occupational demand and to render technical assistance to administrators and planners who discover that job placement rates for some training programs have dropped despite forecasts of growing occupational employment demands.³⁰

Subcontract Management

Some information vital to education and training program evaluation must be collected through an employer follow-up survey because specific data elements necessary in performance measures are not included in the UI wage records. In its first two years of operation, the Texas SOICC procured the services of a private for-profit contractor, Dr. Jim Reed (dba the Texas Student Information System or TEXSIS), to conduct the employer follow-up survey. The Texas SOICC published a request for proposals in the *Texas Register* to secure the services of a subcontractor to conduct the employer follow-up survey in Program Year 1994-1995. Because the services provided by TEXSIS in prior years had been adequate, the request for proposals expressed the Texas SOICC's preference to continue its contractual relationship with Dr. Reed. A proposal was submitted by TEXSIS; no other proposals were received. The proposal was judged to be responsive to the request and its costs of services reasonable. The subcontract was awarded to TEXSIS for \$101,927.

Because of a postal rate increase and because the Texas Higher Education Coordinating Board requested follow-up on a larger number of former students than previously anticipated, the employer follow-up contract was amended and the budget increased by 9.4% to \$111,509. It had been expected that by "*front loading*" the developmental costs into the first two years of subcontracts with TEXSIS and through economies of scale and transition to a high productivity mode of operations, the per unit cost for the employer survey would drop dramatically in the third year of operation. While TEXSIS performed its services on budget and put forth sufficient effort to achieve more than the required 80% response rate, the much anticipated reduction in per unit costs was not realized. With no postal rate increases announced for the near future, the Texas SOICC expects a significant reduction in the per unit cost for the employer follow-up survey will be realized in the 1995-1996 Program Year.

The Texas SOICC also hoped to move up the date when the results of the employer follow-up survey could be delivered to our customers. Delays in prior years in obtaining seed records and in obtaining employer contact information through the TEC UI wage record match resulted in the delivery of information to participating agencies and educational institutions at a time so late in the program year that it could not be used in compiling compliance reports by their due dates. Once again in Program Year 1994-995 there were delays in obtaining seed records while divisions within the Higher Education Coordinating Board debated the issue of including the records of former university and public health science center students in the employer follow-up survey. Delays in obtaining seed records had a domino effect in that they caused the SOICC to miss its first window of opportunity for matching against the UI wage records to obtain employer contact information. Consequently employer surveys were mailed and the response deadline was set on a timetable comparable to that used in prior years. The much anticipated accelerated delivery of employer follow-up survey results was not realized in Program Year 1994-1995. In fact, so many delays were encountered that the employer follow-up survey contractor had time only to prepare preliminary analyses before the annual follow-up conference and to provide general findings rather than detailed analyses in his final report before contract close out.

APPENDIX A

VOLUNTEER PILOT DISTRICTS FOR PROGRAM YEAR 1994-1995

VOLUNTEER DISTRICT	FOLLOW-UP SYSTEM LIAISON
Abilene ISD	Betty Weisinger
Aldine ISD (Houston area)	Franklin Higgins
Amarillo ISD	Lucy Walker and Marvin Hart
Arlington ISD	Lem Newman
Beaumont ISD	Betty Nixon
Big Spring ISD	Loren Spencer
Brownwood ISD	Dr. Sue Jones
Bryan ISD	Dr. Ernest Johnson
Conroe ISD	Dr. Earl Smith and Ron Converse
Cypress-Fairbanks ISD (Houston area)	Tom Schafer and Bob Singletary
El Paso ISD	Maribel Rozendal
Fort Worth ISD	Buford Neal
Hereford ISD	Corky Lockmiller
Judson ISD (San Antonio/Converse area)	Pat Wingo-Macune
Leander ISD	Mark Kincaid
McAllen ISD	Dr. Larry Kohler and Leonard Thielin
Plano ISD	Ron Winkleman
Rusk ISD	Joy Jones
Silsbee ISD	Mabyn Day
Tyler ISD	Sue Bell
United ISD (Laredo area)	Dr. Delores Medrano
Victoria ISD	Jim Morton
Waco ISD	Wanda Barton
Waxahachie ISD	Dr. Rick McMichael
Ysleta ISD (El Paso area)	Dr. Arny Viramontes
Consults: Eileen Booher (Gulf Coast TP), Ray Brown (Southeast Texas TP), Becky Colvin and Roger Johnson (Golden Crescent TP), Dr. Micah Dial (TP Evaluation contractor), Charles Dunnam (West Central QWFP/chair of QWFP Directors' Association), Arturo Meraz (South Texas QWFP), Dr. Carrie Nelson (Deep East Texas TP), Deborah Pickering (Panhandle QWFP), John P. Syer (Region Four Education Service Center), and Don Travis (Southeast Texas QWFP).	
Key TEA contacts: Dr. Jay Cummings, Lorraine Merrick, Hank Madeley, Dr. Mark Butler, Elvis Shoaf, Dave Kinnaman, Karen Cornwell, Nina Taylor, Darlene Gouge, Dr. Dan Bristow, and Albert Black	

APPENDIX B

SAMPLE TEXT FOR PUBLIC MEETING NOTICE

- PURPOSE:** To inform parents and community leaders about the features and benefits of the Automated Student and Adult Learner Follow-Up System
- SPONSORS:** Texas Education Agency
Texas Higher Education Coordinating Board
Texas Department of Commerce
Texas State Occupational Information Coordinating Committee
Amarillo and Hereford Independent School Districts
Amarillo College
Panhandle Quality Work Force Planning
- WHEN:** December 19, 1994 (7:00 - 8:00 PM)
- WHERE:** Amarillo Public Library
Central Branch, Room B
413 East Fourth Street
Amarillo, Texas
- SPEAKER:** Marc Anderberg, Follow-Up System Director

The Automated Student and Adult Learner Follow-Up System is in its third year as a demonstration and capacity building project. The system is operated by the Texas State Occupational Information Coordinating Committee and is funded with federal vocational education dollars by the Texas Education Agency and the Texas Higher Education Coordinating Board. For three years, community and technical colleges (such as Amarillo College and TSTC - Amarillo) have piloted the use of record linkage techniques to determine what happened to their students after graduation. Last year, Amarillo and Hereford Independent School Districts were among the first eight volunteer districts selected to pilot test the use of the same techniques to identify results for high school graduates. This year they will be joined by twenty-three other districts as the system moves closer to statewide implementation.

The information gathered by the follow-up system is used in program planning and evaluation by the Texas Council on Workforce and Economic Competitiveness, state education agencies, regional Quality Work Force Planning Committees, Tech Prep consortia, Private Industry Councils, colleges, and school districts. By using cost-effective record linkage techniques, the Automated Follow-Up System provides these groups with the information they need to determine what kinds of jobs their former students get and where they go as they seek work or additional training and education. These data will drive planning to improve coordination among training and education programs to meet labor market demands and to lay the foundation for regional economic development. That will result in more efficient use of tax dollars. Outcomes data also will become part of an Automated Career Information Delivery System to help students make informed career choices in collaboration with their parents and counselors.

Interested parents and community leaders are invited to this informative meeting. Your views and opinions will help shape statewide implementation of the follow-up system in July 1996.

APPENDIX C

SAMPLE COPY FOR HOST-CITY MEDIA COVERAGE

Amarillo and Hereford Independent School Districts have been selected as two of twenty-five pilot sites for a study to determine what happens to students after they leave high school. Two years ago with the consent of their Boards of Trustees, Dr. Wilson (Superintendent of Amarillo ISD) and Dr. Greenwalt (Superintendent of Hereford ISD) volunteered their districts to represent the Panhandle planning region in the first round of the pilot study. Their requests were accepted by the Texas State Occupational Information Coordinating Committee (SOICC), a state research unit. The SOICC, at no expense to the pilot districts, collected data on the results achieved by their 1992 graduating classes. First round pilot districts were invited to participate again in this year's study. Both Amarillo ISD and Hereford ISD accepted the invitation.

Pilot sites, in addition to receiving follow-up data, are voting members on the committee that will advise the Automated Follow-Up System as it moves toward full statewide implementation during the 1995-1996 school year. Lucy Walker and Marvin Hart will represent Amarillo ISD as members of the site-based committee for the Panhandle region; Corky Lockmiller will represent Hereford ISD. Dr. Stan Adelman of Amarillo College, Teresa Isbell of TSTC-Amarillo, Deborah Pickering of the Panhandle Quality Work Force Planning Committee, and Leanne Vogel of the Panhandle Tech Prep Consortium are also on the site-based committee.

The Automated Student and Adult Learner Follow-Up System is now in its third year of operation at the Texas SOICC. It is funded with federal vocational dollars through the Texas Education Agency and the Texas Higher Education Coordinating Board to demonstrate the cost-effectiveness of using record linkage techniques to collect outcomes data. The Texas SOICC electronically matches student records with various public databases to see what kind of jobs they entered after graduation and where they went as they searched for work or to continue their education and training. In the past, traditional mail and telephone surveys were used to obtain that kind of follow-up information but those techniques are very expensive with estimated costs at \$13 to \$20 per response. The SOICC's automated system, by comparison, was able to collect follow-up information on Amarillo College graduates for the class of 1992 for less than 50¢ per student. Similar cost savings were achieved for Amarillo ISD, Hereford ISD, and other participating first-round pilot school districts last year when record linkage techniques were tested for follow-up on high school graduates.

The Texas SOICC will conduct an informational meeting to explain in more detail how the automated follow-up system will help administrators plan and evaluate the delivery of workforce development programs. The meeting will be held on December 19, 1994 from 7:00 to 8:00PM in Room B of the Amarillo Public Library (Central Branch), 413 East Fourth Street. Special emphasis will be placed on Amarillo College and TSTC-Amarillo's three years of participation plus Amarillo ISD and Hereford ISD's first year as secondary education follow-up pilot sites. After an explanation of the follow-up techniques used, the meeting will be open for public comment. The views and opinions of interested parents and community leaders will be used to guide statewide implementation of the follow-up system in July 1995.

APPENDIX D

TEXT OF INFORMATION CONTAINED IN TRI-FOLD BROCHURES ON AUTOMATED FOLLOW-UP

Front Cover

AUTOMATED STUDENT & ADULT LEARNER FOLLOW-UP SYSTEM

How effective are the state's publicly-funded workforce development programs?

Are former students and program participants prepared to succeed at the next level of education and training?

Where do they go after they leave education and training programs?

What kind of jobs do they find?

How much do they earn?

How does training affect their long-term prospects for career advancement and wage gains?

Page 1

PURPOSE

Automated follow-up provides vital information to students, parents, taxpayers, legislators, program planners and administrators who use this information to: improve career decision-making; update the curriculum and delivery of training services to meet rapidly changing needs of the work place; evaluate the fit between the supply of and demand for high skill workers; and calculate the return on investment of public funds in education and training programs.

SEED RECORDS

With the permission of education and training providers and the informed consent of subjects, the Texas SOICC extracts background information from public data bases on former students and program participants from: community and technical colleges; pilot independent school districts; volunteer universities; JTPA service delivery areas; Food Stamp Employment and Training; and Job Opportunities and Basic Skills (the JOBS) program.

Page 2

RECORD MATCHING

Cost-effective record linkage techniques are used to identify successful outcomes for education and training programs by matching seed records to corresponding information in other public data bases.

Texas Higher Education Master Enrollment Files: Do former students and participants pursue additional training and education? What is their major field of study? How many credit hours do they take?

Texas Employment Commission Quarterly Unemployment Insurance Wage Records: Do they find jobs in Texas that are covered by the state's Unemployment Compensation Act? What industries are most likely to hire program completers? How much do program completers earn?

Federal Personnel Records: What percentage enter the military, US Postal Service or civil service?

Surrounding States' Records: What percentage go to neighboring states to find jobs or to continue their education and training?

APPENDIX D (Continued)

TEXT OF INFORMATION CONTAINED IN TRI-FOLD BROCHURES ON AUTOMATED FOLLOW-UP

Page 3

EMPLOYER SURVEY

A follow-up survey is sent to employers who have hired recent graduates and program completers to determine: Where did former students and participants find work? Did they find full-time employment? Were their job placements related to the training they received?

LONGITUDINAL STUDIES

Additional follow-up is conducted to determine the long term effects of programs: Does high skills training increase the likelihood of job retention? Do former program participants enjoy significant wage gains over time? Do workers return for additional education and training to improve their productivity and to advance their careers?

PRIVACY PROTECTION

Information about outcomes is used to evaluate the statewide workforce development system, interagency coordination, educational institutions and specific training programs. To ensure privacy, all data are aggregated. The Automated Follow-Up System does not release individually-identifiable information.

Page 4

Operated by the
Texas State Occupational
Information Coordinating
Committee (SOICC)

funded by

Texas Education Agency

Texas Higher Education
Coordinating Board

Texas Department of
Commerce

in cooperation with

Texas Employment
Commission

Texas Department of
Human Services

Texas Council on
Workforce and Economic
Competitiveness

for more information call
Marc Anderberg, Director
Automated Follow-Up System
(512) 502-3754

Back Page

Texas SOICC logo

Texas State Occupational
Information Coordinating
Committee

Travis Building, Suite 205
3520 Executive Center Drive
Austin, TX 78731

APPENDIX E.1

OUTREACH EFFORT

REMINDER TO SECONDARY EDUCATION ON THE IMPORTANCE OF DATA QUALITY CONTROL AS THE KEY TO SUCCESSFUL FOLLOW-UP

TO: ALL SUPERINTENDENTS

Information about the results achieved by students after they leave high school is vitally important to the cycle of planning and evaluation for continuous improvement. In the past, school districts have used traditional telephone and mail survey methods for conducting follow-up on their former vocational education students. Such methods can be expensive and time-consuming. Moreover, school districts often report that by using traditional follow-up methods they could locate fewer than half of their students from the most recent graduating class. When response rates are low, the follow-up data obtained may not be representative of the entire group being studied and, consequently, it would be imprudent to use those data to drive program planning and evaluation. Nonetheless, increased public attention on accountability in education has compounded the demands for better and more thorough documentation of the results achieved by students after they leave school.

The Texas State Occupational Information Coordinating Committee (SOICC) has pilot tested the use of automated record linkages as an alternative to traditional surveys for obtaining follow-up information. By linking former students' records by Social Security number to the Texas Employment Commission's Unemployment Insurance wage records, the SOICC can determine what percentage found work in Texas covered by the state's Unemployment Compensation Act. Through linkages to the Texas Higher Education Coordinating Board's master enrollment files, the SOICC can determine what percentage continued their pursuit of education and training at one of the state's public institutions. Other record linkages document the percentages going into the military, US Postal Service, federal civil service or who find work or pursue higher education in some of the surrounding states. On behalf of all of the Texas Community and Technical Colleges and on behalf of volunteer pilot school districts, the SOICC has been successful in determining what happened to more than 80% of exiting cohorts over the past three years at a fraction of the cost associated with traditional surveys.

In the federal program year beginning on July 1, 1995, the SOICC will expand its follow-up system to serve all independent school districts in Texas. Follow-up services on graduates and leavers of secondary education will be funded under a grant from the US Department of Labor and will be provided at no cost to school districts. Seed records will be extracted from information already on file with the Public Education Information Management System (PEIMS) in Austin. Therefore no extra data collection or records processing effort will be required at the district level. It is vitally important, however, that the districts obtain and verify Social Security numbers for all students who attain senior status by the October 1995 snapshot. Efforts by school districts to improve quality control on the data submitted to PEIMS will pay rich dividends later in the program year by enabling the SOICC to document the successes achieved by those students after they leave high school.

Please be advised that students and their parents have a right to know that information will be gathered and organized by Social Security numbers for the purpose of statistical analysis. Students and parents also should be assured that these data will be used in program planning and evaluation by authorized state and district officials. The privacy and confidentiality of individually identifiable information will be protected under the provisions of applicable federal laws and state regulations. If your student handbook does not currently reference statistical uses of student data, you are urged to contact Marc Anderberg, Director of the SOICC's Automated Follow-Up System to discuss appropriate language for inclusion. Mr. Anderberg can be reached at (512) 502-3754.

APPENDIX E.2

OUTREACH EFFORT

REMINDER TO SECONDARY EDUCATION ON THE IMPORTANCE OF VALID SOCIAL SECURITY NUMBERS AS THE KEY TO SUCCESSFUL FOLLOW-UP

TO: THE ADMINISTRATOR ADDRESSED

In the federal program year beginning July 1, 1995, the Texas State Occupational Information Coordinating Committee (SOICC) will provide follow-up services to all public independent school districts in Texas. These follow-up services will be funded by the US Department of Labor and will be provided at no charge to the district. The SOICC will use automated record linkage techniques to help document the successes achieved by former students from your district after they leave high school. Linkages to Texas Employment Commission files will help identify former students who found jobs in Texas. Linkages to the Higher Education Coordinating Board's master enrollment files will indicate which former students are continuing their education and training at one of the state's public institutions. Other linkages will help document the percentages going into the military, US Postal Service, federal civil service or who find work or pursue higher education in some of the surrounding states. Follow-up information will be returned by the SOICC to the district. The data can be used in compiling annual performance reports and the district's internal program planning and evaluation.

The automated linkage technique relies on Social Security numbers as the common data element shared by student records and by administrative data bases likely to contain information about the successes your students achieved after high school. It is vitally important by the time students attain senior status that the district has obtained and verified their Social Security numbers for submission to the Texas Education Agency's Public Education Information Management System (PEIMS). *While districts are at liberty to generate their own student identification numbers and to withhold Social Security numbers from PEIMS*, districts that exercise that prerogative diminish their ability to benefit from automated follow-up. To meet demands that they be held accountable for results, districts without Social Security numbers on file for the vast majority of their students will have to continue to rely on expensive, time-consuming, and far less reliable traditional survey methods to document what happened to their former students.

Each district is strongly urged to review the student records it has submitted to PEIMS. A concerted effort should be made to secure the permission of students and their parents to use information organized by Social Security numbers for statistical purposes. Your efforts to increase the percentage of student records containing Social Security numbers and to verify those Social Security numbers already on file with PEIMS will pay great dividends later in the program year in terms of the scope and quality of the follow-up data the SOICC can return to the district. As the scope and quality of the data improve, the district will be in a better position to make informed decisions in program planning, management, and evaluation.

APPENDIX F

DATA DELIVERY AND REPORT SUBMISSION DEADLINE

May 1	Earliest completion date for match of seed records to the UI wage records and Higher Education Coordinating Board's Master Enrollment files to identify gross outcomes for the exiting cohort from School Year N.
July 1	Start of new Program Year. Earliest possible date for posting Request for Proposals to secure the services of a subcontractor to conduct an employer follow-up survey to obtain occupationally-specific outcomes for the exiting cohort from School Year N and optional longitudinal studies of cohorts exiting prior to School Year N.
August 1	Earliest possible date for selecting employer follow-up survey subcontractor.
August 31	End of School Year N+1
September 1	Beginning of School Year (N+2); earliest possible date for first round mail out of employer follow-up survey on exit cohort from School Year N and optional longitudinal cohorts.
October 1	Earliest possible date for second employer survey mail out.
October 15	Earliest possible date to start "persistence" telephone calls to stimulate employer response.
November 1	Earliest possible date for third wave of employer follow-up survey mail out.
December 15	Earliest possible closing date for employer response to mail survey.
December 31	End of calendar year; end of TEC fourth quarter for UI wage record reporting.
February 15	Seed records available from the Coordinating Board on completers and leavers from School Year N+1; Master Enrollment file available on Fall term for School Year N+2 from the Coordinating Board to identify transfers through a match with seed records from School Year N+1 or earlier exiting cohorts.
March 31	Deadline for employers to file UI wage record reports for fourth quarter of prior year.
April 1	Seed records available from TEA on completers and leavers from public education in School Year N+1. Earliest possible match with Coordinating Board master enrollment files for Fall term of School Year N+2. Earliest possible delivery date of occupationally-specific information from the employer follow-up survey on the exiting cohort from School Year N or earlier exiting cohorts.
May 1	Official release date for UI wage records from fourth quarter of prior calendar year; earliest possible date to match seed records from School Year N+1 to identify gross employment outcomes. Earliest possible date to submit exceptions lists of not founds from School Year N+1 for matching with Department of Defense (military), Office of Personnel Management (civil service), US Postal Service, and out-of-state data bases.
June 1	Deadline for school districts to submit VOC-116 reports on the results achieved by exiters from the School Year N+1.

APPENDIX G.1
PUBLIC EDUCATION SEED RECORD FILE FORMAT

Variable	Length	Start	End	Instructions or PEIMS Data Element #
Record Type	1	1	1	Enter "H" for High School for all records
District Code	6	2	7	E0212
Student ID (Social Security Number)	9	8	16	E0001
Sex Code (Gender)	1	17	17	E0004
Gifted-Talented Indicator	1	18	18	E0034
Date of Birth	4	19	22	E0006 (give MM/YY only do not give DD)
Campus ID	3	23	25	E0266
Vocational-Ed indicator	1	26	26	E0031
Service ID Code	8	27	34	E0724 (Report only the last occupationally specific Service ID code reported for student on a 170 record; do an edit check to make sure that only Service ID codes valid for a 170 record are reported. If more than one Service ID code is reported on the most recent 170 record, report the highest of the codes.)
LEP Indicator Code	1	35	35	E0790
Economic Disadvantaged	2	36	37	E0785
Special Ed Indicator	1	38	38	E0794
Ethnicity	1	39	39	E0005
Last Name	4	40	43	E0705 (truncate to first 4 characters)
First Name	1	44	44	E0703 (truncate to first character)
Middle Name	1	45	45	E0704 (truncate to first character)
Bilingual	1	46	46	E0032
ESL Indicator	1	47	47	E0800
Grade Level Code	2	48	48	E0017 (select only grade level = 12)
Graduation Type Code	2	49	50	E0806
Date of Graduation	4	51	54	E0791 (report as MMY)
College Entry Indicator	1	55	55	E0792
Dropout Reason Indicator	2	56	57	E0875
Work Study Voc Support	1	58	58	E0888
Elimination Sex Bias	1	59	59	E0890
Cooperative Voc Ed	1	60	60	E0920
Homemaker Single Parent	1	61	61	E0829
Zero Fill	1	62	62	zero fill; all records fixed length = 62 bytes

APPENDIX G.2 HIGHER EDUCATION SEED RECORD FILE FORMAT

Variable	Type	Length	Start	End	Explanation
Record type	numeric	1	1	1	Graduate or leaver
FIE	numeric	6	2	7	Federal institution identifier
Student ID	numeric	9	8	16	Social Security number
Gender	alpha	1	17	17	Gender of student
Classification	numeric	1	18	18	Student level (e.g., freshman)
Date of Birth	numeric	6	19	22	MMYY format
First time in college or transfer student	alpha	6	23	28	Flags first time in college or FIE code of institution where transfer student first enrolled
Type of Major	numeric	1	29	29	Academic, Technical, Tech Prep
Major	numeric	8	30	37	Declared major by CIP code
Semester Credit Hours	numeric	2	38	39	Fall term
Semester Credit Hours	numeric	2	40	41	Spring term
Semester Credit Hours	numeric	2	42	43	Summer Session I
Semester Credit Hours	numeric	2	44	45	Summer Session II
Ethnic Origin	numeric	1	46	46	Co. Board uses Census values
Last Semester Enrolled	numeric	1	47	47	Fall, Spring, Summer I or II
Last Year Enrolled	numeric	2	48	49	YY format
Type of Award	alpha	8	50	57	Type of degree or award if any
Level of Award	numeric	1	58	58	Associate, Certificate, Advanced Skills
Month Graduated	numeric	2	59	60	MM format
Month Graduated	numeric	2	61	62	YY format

APPENDIX G.3 HIGHER EDUCATION ENROLLMENT MATCH OUTPUT FILE FORMAT

Variable	Type	Length	Start	End	Explanation
Transfer FICE	alpha	6	63	68	FICE code for transfer institution
Institution type	alpha	1	69	69	Transfer institution: Community/Technical College, University, Health Science Center
Transfer major	alpha	8	70	77	Major at transfer institution by CIP code
Type of transfer major	alpha	1	78	78	Academic, Technical, Tech Prep
Semester Hours	alpha	2	79	80	Number of credit hours attempted at transfer institution in match term
Semester/Year	alpha	3	81	83	Last two digits of the match year and semester code (always Fall term)

APPENDIX G.4 UI WAGE RECORD MATCH OUTPUT FILE FORMAT

Variable	Type	Length	Start	End	Explanation
First name	alpha	1	84	84	For validation of SSN match
Initial	alpha	1	85	85	for validation of SSN match
Last name	alpha	10	86	95	For validation of SSN match
SIC Code	alpha	4	96	99	Standard Industrial Classification of firm's principle activity
Employer ID	alpha	9	100	108	Unique identifier linking TEC UI wage records and employer address files
Firm name	alpha	35	109	143	Primary company name
Company name (2)	alpha	35	144	178	Secondary company name
D.B.A.	alpha	35	179	213	Doing Business As (trade name)
Address line 1	alpha	35	214	248	
Address line 2	alpha	35	249	283	
City	alpha	20	284	303	
Blank	alpha	1	304	304	
State	alpha	2	305	306	Postal abbreviation
Blank	alpha	2	307	308	
Zip code + 4	alpha	10	309	318	Extended Zip code
Wages (whole dollars)	alpha	5	319	323	Earnings for matched quarter
Wages (remaining cents)	alpha	2	324	325	Earnings for matched quarter
Match quarter	alpha	3	326	328	YYQ format

APPENDIX G.6
EMPLOYER FOLLOW-UP SURVEY COVER LETTER

Texas Council on Workforce and
Economic Competitiveness



Tom Frost, *Chair* ♦ Martha Hinojosa-Nadler, *Vice-Chair* ♦ Barbara Cigainero, *Executive Director*

January, 1995

Dear Texas Employer:

The Texas Council on Workforce and Economic Competitiveness, in cooperation with the State Occupational Information Coordinating Committee, the Texas Education Agency and the Texas Higher Education Board, has established a system for improving the quality of Texas' job training programs. This follow-up system provides critical information for program evaluation, for calculating returns on the investment of tax dollars in education and training, and for planning future programs. We need your help, however, to make it work.

Our records indicate that you have employed one or more students who graduated from various community/technical colleges or pilot school districts and universities across the state. Each student's name is listed on the enclosed survey. We would greatly appreciate you or a personnel representative from your company providing us with each employee's job title and other information listed on the form.

I know this will take some effort, but it is extremely important. The Texas Council on Workforce and Economic Competitiveness and the state's workforce development partner agencies need this information so we can better determine the success rate of the state's education and job training programs. By consolidating this request on a single survey form, it is our goal to streamline data collection to assess public education's capacity to meet the demands of Texas employers for a highly skilled workforce. Please mail the completed form in the enclosed self-addressed/stamped envelope. I assure you that the information provided will be completely confidential. It will be analyzed by a team of authorized researchers from state agencies and educational institutions solely for the purpose of planning program improvements.

Thanks so much for your cooperation. If you have any questions, please contact Dr. Jim Reed, research team leader, at (903) 872-7463.

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom Frost", is positioned above the typed name.

Tom Frost
Presiding Officer

APPENDIX G.7
EMPLOYER FOLLOW-UP SURVEY RESPONSE FILE FORMAT

Variable	Type	Length	Start	End	Explanation
Response	alpha	1	351	351	Did the employer respond to the survey? (Yes/No)
Job title	alpha	25	322	376	Employer supplied occupational title (verbatim) -- also known as payroll title or lay title
OES Code	alpha	5	377	381	OES Code assigned to the payroll title by subcontractor
Degree of Training-Relatedness	alpha	1	382	382	Results of applying the Texas-validated CIP-to-OES crosswalk tool to data files: directly related, closely related, entry-level/career ladder, generally related, not related
Zip Code	alpha	5	383	387	Zip code of primary worksite (supplied by employer)
City	alpha	20	388	407	Worksite city (converted from Zip code by subcontractor using geographical crosswalk tool)
State	alpha	2	408	409	Worksite state (converted from Zip code by subcontractor using geographical crosswalk tool)
County	alpha	3	410	412	FIPS - standardized county code (converted from ZIP code by subcontractor using geographical crosswalk tool)
Full-time/Full-quarter flag	alpha	1	413	413	Did the former student work full time for the full quarter for which earnings are reported? (Supplied by employer with 35 hour = full time definition imprinted on survey instrument)

APPENDIX H.1 MENU & REPORT SELECTION SCREENS FOR SUPPLEMENTAL FOLLOW-UP

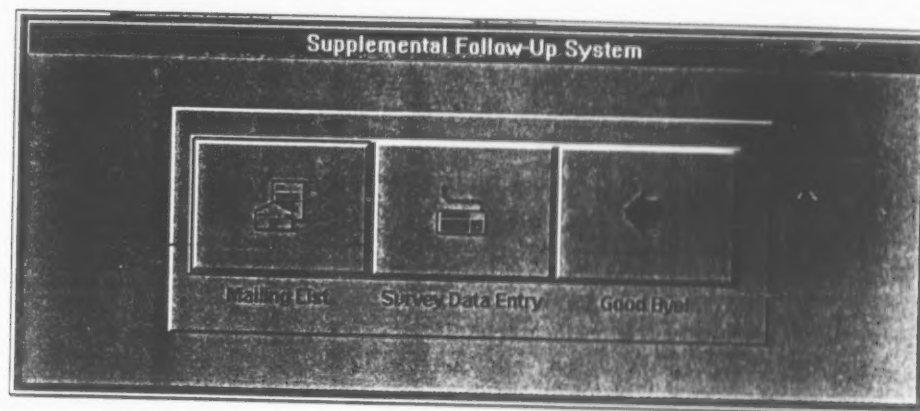


Figure 1. The Main Menu

MAILING LIST

1. Collect student name and address information.
2. Print mailing labels using a laser printer.
3. Import name and address information.
4. Print reports of a) graduates requiring follow-up, b) all graduates not found through the ASALEFS

SURVEY DATA ENTRY

1. Input screen for supplemental data.
2. Print reports of survey results.

GOOD BYE!

1. Quit the application.



APPENDIX H.2

SAMPLE ADDRESS/CONTACT INFORMATION SCREEN

001-07-1973

Name: bob crawford

Address: 1125 lamar blvd
apt 34

City: austin ST: TX Zipcode: 78660-

Award	Type of Major	CIP Description	Graduation Date
CERT	Academic	BUSINESS ADMIN & MGMT, GENERAL	05 94

Buttons: Edit, Save, Cancel, Reports, Import, Next, Prev, Quit

Figure 2. The Address Information Data Entry Screen

- displays graduate information: level of award, type of major, cip description, and graduation date
- print reports
- import address data

Push Buttons Functions

- Edit - allow editing of name and address information
- Save - saves the information entered
- Cancel - cancels the editing/data entry process
- Reports - displays the report menu
- Import - allow external data files to be imported into the application
- Next - go to the next record
- Prev - go to previous record
- Quit - return to main menu

APPENDIX H.3 SAMPLE DATA INPUT SCREEN

The screenshot shows a Microsoft FoxPro window titled "Microsoft FoxPro". Inside, there's a form with the following fields and sections:

- Student ID Number:** 001-07-1973
- Name:** bob crawford
- ADDITIONAL EDUCATION**
 - College or University Attended:** KILGORE COLLEGE
 - State:** TX
 - Semester Attended:** Spring
 - Year Attended:** 1
 - Type of Institution:** Community or Technical College
- EMPLOYMENT INFORMATION**
 - Employment Status:** Sometime employed full-time
 - Self Employed Full-time:** ☐ Yes ☒ No
 - Volunteer related to college training:** ☒ Yes ☐ No
 - Volunteer Organization:** texas militia
 - Salary:** 0.00
 - PER:** (dropdown)
 - Job Title:** (text field)
 - Company or Firm:** (text field)
 - Address:** (text field)
 - City:** (text field)
 - State:** (dropdown)
 - Phone:** (text field)
 - Type of Contact:** (dropdown)
 - Survey Validation:** (dropdown)
- Buttons:** Add, Edit, Save, Cancel, Next, Prev, Reports, Quit

Figure 3. The Data Entry Screen

- displays name of former graduate after the SSN is validated
- print reports
- edit supplemental information

Push Buttons Functions

- Add - add record to the database
- Edit - allow editing of name and address information
- Save - saves the information entered
- Cancel - cancels the editing/data entry process
- Next - go to the next record
- Prev - go to previous record
- Reports - displays the report menu
- Quit - return to main menu

ENDNOTES

¹ Marc Anderberg *Final Report: Automated Student and Adult Learner Study* (Austin, Texas: Texas State Occupational Information Coordinating Committee, August 1994) page 11.

² Morgan, Hunt and Carpenter, *Classification of Instructional Programs: 1990 Edition* (Washington, D.C: U.S. Department of Education/Office of Educational Research and Improvement/National Center for Education Statistics, 1990) page 5-6 (*passim*).

³ *Ibid.* page xiii (*passim*).

⁴ See Anderberg, *op. cit.*. Pages 59-60 report on the JTPA's decision to adopt the CIP coding system in order to improve its ability to determine the training-relatedness of job placements achieved by its program completers who had received occupationally-specific training. Pages 68-69 report on the methods used to continuously update and validate the CIP-to-OES crosswalk to Texas education, training and employment practices. Note also that under federal law and regulations governing the State Postsecondary Review Entity (SPRE), the Texas Higher Education Coordinating Board endorsed the Texas-validated CIP-to-OES crosswalk as the tool to be used in assessing the degree of training-relatedness for job placements achieved by postsecondary program exiters.

⁵ A distinction is made between administrative information (such as that contained in the UI wage records) and information about interventions, some of which might be construed as negative. For example, a UI benefit payments data base might include information about an applicant for benefit's reasons for employment termination. Generally speaking, it is easier to negotiate data sharing agreements to obtain education and training seed records and positive outcomes information (e.g., employed, continuing to pursue education and training) than it is to negotiate access to data bases likely to hold information about negative outcomes (e.g., receiving unemployment benefits, receiving welfare payments, incarcerated). Therefore researchers talk about a "confidentiality barrier" or "confidentiality threshold" not as a constant but rather as a sliding scale that depends on multiple factors including the relative sensitivity of items in a data base and the likelihood that an individual could be negatively affected by intentional or inadvertent disclosure of that information.

⁶ On average, TEA PEIMS files contain Social Security number for 89.7% of the students in each ISD. In extracting seed records for the pilot districts, TEA provided Social Security numbers for 91% of the cohort. While this was slightly better than the statewide average, it was not unexpected because pilot districts had been selected in part based on their reputations for conscientious efforts on data quality control.

⁷ In studying the community and technical college exiting cohort we begin with a group to some extent self-selected insofar as by choice or economic circumstances had enrolled at an in-state public institution. Those who exit a public community or technical college to pursue higher education elsewhere are more likely to be motivated by the same preferences of economic circumstances to transfer to another publicly funded, in-state community/technical college or university. Therefore, they are more likely than a less self-select cohort of exiting high school seniors to be located through the SOICC's match of seed records to the Higher Education Coordinating Board's master enrollment files.

⁸ Proposed uses of statistical controls were not exercised for several reasons. Because the exit cohort from the volunteer districts in the pilot study are not necessarily representative, inferential statistics are not being used to predict results for the entire population of seniors exiting the Texas public education system statewide. Moreover, we hypothesize that there are response set biases in the results documented through automated record linkage techniques particularly with respect to the post-exit experiences of students who were not labeled as "economically disadvantaged" while in high school. For example, we would hypothesize that such subjects would be more likely to have the wherewithal to afford the generally greater tuitions and expenses incurred in pursuing higher education at a private or out-of-state institution. Before using statistical control techniques to test the interactive effects economic status might have in the relationship between independent variables (such as ethnicity and gender) or intervening variables such as expressed plans for college, we strongly urge districts to do supplemental follow-up using more traditional survey methods to determine the results achieved by the subjects the SOICC could not locate through automated record linkages. Nonetheless, we offer the illustration below to suggest why it is important to do analysis at the recommended level of detailed control.

Do you plan to go to college after high school?	ECONOMIC STATUS			
	Economically Disadvantaged		Not Econ. Disadvantaged	
No plans for college recorded in PEIMS	54.0%		35.1%	
% enrolled for fall term at Texas public institution of higher education		14.0%		25.2%
% found employed in Texas but not enrolled in TX public higher ed. institution		44.4%		43.7%
College plans recorded in PEIMS	46.0%		64.9%	
% enrolled for fall term at Texas public institution of higher education		52.3%		62.5%
% found employed in Texas but not enrolled in TX public higher ed. institution		26.5%		16.7%
Total %	100.0%	N.A.	100.0%	N.A.
Total Count	4,578		21,101	

⁹ Success at the next level of education and training is difficult to document through the use of data currently made available to the Automated Student and Adult Learner Follow-Up System by the Coordinating Board. If a match for an exiting high school senior is found in the master higher education enrollment files, available data from the fall semester of the subsequent school year allows us to determine that the person was admitted to a public institution of higher education in Texas, where they enrolled, how many credit hours they attempted, and what major (if any) they selected. None of those outcomes necessarily represents a success. Genuine "successes" come later in terms of earning passing grades in postsecondary courses, graduating with a certificate or degree, or exiting early with "*marketable skills*." Open admissions policies require some of the state's public institutions to accept any student with a high school diploma. At best we could infer some modicum of success from available fall term enrollment data only if the public institution or major program in which a student was enrolled had restricted admissions. In lieu of that information, preparation to succeed at the next level of education and training might be inferred from other kinds of matches not currently done by the follow-up system.

- To graduate from high school students must pass an exit test, the TAAS. Passing that exit test tells us only that the student is capable of doing high school level work. The TASP test, on the other hand, is an entrance exam used in Texas to determine if a student requires remediation before enrolling in a postsecondary. By electronically linking to the TASP score data base or other files containing scores on other tests with some predictive validity (e.g., SAT or ACT scores), the follow-up system could provide short term proxy measures of success while waiting for a third or fifth year wave of longitudinal matching that could document students' later successes in earning certificates and degrees and/or delayed entry into the labor market.
- Grades earned at the postsecondary level might also be construed as proxy measures of success. However, the Coordinating Board does not maintain course grades or grade point averages for students in the state's central files. A consortium of higher education institutions is developing an electronic transcript system which will allow institutions to track the performance of a former student course-by-course or in terms of GPA or GPA within major at that student's transfer institution. Comparable arrangements should be made between secondary and postsecondary institutions. Through the use of an electronic transcript system, participating high schools would be able to determine how well they prepared their students to succeed at the next level of education and training.

In fact, very detailed analysis could be done on a course to course basis. For example, it would be useful for a high school to know how well its algebra classes prepared students to earning passing or above average grades in calculus classes at the postsecondary institutions with which it has articulation agreements.

¹⁰ Of the 12,246 subjects located through the match with the Coordinating Board's master enrollment files, 2,411 (19.7%) did not declare a major during the Fall term of 1994; 1,612 (13.2%) called themselves Liberal Arts majors. Together, these two categories account for nearly one-third of the former students from the pilot districts who pursued higher education at a Texas public institution of higher education.

¹¹ For a history of automated student follow-up prior to the Texas SOICC's involvement see Marc Anderberg, Automated Student and Adult Learner Follow-Up Final Report (Austin, Texas: Texas SOICC, June 1993) pages 4 - 6.

¹² An Exceptions List pulls the names of those not located from the Automated Student Follow-Up Systems outcomes files then matches those names back to the Coordinating Board's master files in order to supply institutions with student contact information they can use in their supplemental survey efforts. The Exceptions Lists is organized by CIP to help the institutions optimize their supplemental follow-up strategies. While institutions are allowed to try to locate any student on the Exceptions List, they are advised to concentrate first on those students listed as completers or leavers of programs (by CIP) which had insufficient documentation of successful outcomes through the Automated Follow-Up System to meet performance standards. Also in organizing the Exceptions List by CIP, the printout helps administrators determine which resources to use to fund/staff the supplemental follow-up effort. Moreover, a CIP-based Exceptions List makes it easier for administrators to locate information in departmental or faculty files that might help them locate the former students missed through automated record linkages.

¹³ For a history of the training-relatedness issue, see the Automated Student and Adult Learner Follow-Up System's final reports for Program Year 1992-1993 and Program Year 1993-11994; in particular see the latter at pages 68 - 70.

¹⁴ It should be noted for the record that the match against the UI wage records by the Coordinating Board was slightly different than that requested by the Texas Education Agency. Whereas public education's seed records were matched with a single reporting quarter (Fourth Quarter 1994), higher education's seed records were matched with five quarters of UI wage record data (Fourth Quarter 1993 through Fourth Quarter 1994). The Coordinating Board wanted the match with more quarters because higher education students can graduate or exit after any quarter. Rather than count employment outcomes at a single quarter, the Coordinating Board counts former students as employed if they are located in the UI wage records during any quarter after exiting the institution of higher education. It would be inappropriate, therefore, to compare employment rates for secondary and postsecondary completers and leavers. According to the Coordinating Board's interpretation (operational definition) of this performance measure, a former community college student who exits higher education in June, lands a seasonal summer job, but who is not employed during the fourth quarter of that year would be counted as employed. According to the Texas Education Agency's operational definition, a comparable pattern of summer employment followed by

unemployment in the Fourth Quarter would not be counted as a successful labor market outcome for any former student exiting secondary education. In past years labor market outcomes for higher education were calculated using both methods (any post-exit quarter of the five quarters on-line versus fourth quarter only). The match against multiple quarters identifies approximately 2% more successful labor market outcomes on average than does a match of former community/technical college students' records to a single quarter. Anyone making comparisons of gross outcomes between the two groups under current practices should adjust higher education's results downward by 2%.

¹⁵ The Follow-Up Director made the case for adjustments to Higher Education's flat statewide standards based on the JTPA model which takes labor market conditions and mix of subpopulations served into consideration. At the invitation of the chair, the Follow-Up Director and Teresa Alvarez, evaluation specialist for the Texas Department of Commerce, made a joint presentation to the Committee of Practitioners on the JTPA adjustment model. The Committee of Practitioners expressed an interest in recommending similar adjustments to the Coordinating Board. However the commission of the Committee of Practitioners expired before any action was taken on this issue. The Follow-Up Director also made the same recommendation to the Texas Council on Workforce and Economic Competitiveness through his role as resource person for the Performance Measures and Evaluation task group. With the dissolution of the Committee of Practitioners, the Automated Follow-Up Director will continue to explain and recommend adjustment procedures for all performance standards based on the JTPA model.

¹⁶ Training-related jobs are those which, according to the Texas-validated CIP-to-OES crosswalk, both employers and educators would rate as directly or closely related or as entry-level positions on a career ladder leading to a directly related occupation.

¹⁷ The Texas SOICC proposed to develop a Consumer Report System (CRS) that would bring institution and training-program performance histories together in a single package, electronically accessible from terminals located in places convenient to students and workforce development participants. The CRS would provide a mouse-driven menu system that would help users construct the comparisons they believe to be most meaningful in their career decision-making and training program selection. The CRS proposal has been funded by the United States Department of Labor's Employment and Training Administration and will be released for beta testing in pilot *One Stop* Career Centers in Texas in Second Quarter of 1996. The CRS will be developed by the Texas SOICC in collaboration with other *One Stop* implementation states to ensure that the system meets their common needs. It also will include routines for custom configurations upon installation so other states can add their own unique measures and standards to the core provided by Texas. The CRS eventually will be installed in all *One Stop* implementation states.

¹⁸ Cohort names become confusing. Because of information release rules, there is always a lag between the availability of seed records from participating entities and the availability of quarterly employment records. The match with the UI wage records must always precede the employer follow-up mail survey because that match is our source of employer addresses. Moreover, considerable lag time must be allowed for the preparation and mailing of the employer follow-up survey, sending second and third reminders to employers by mail, telephone persistence efforts to get the largest non-responding firms to complete the survey, awaiting employer responses, data entry and coding of responses received. Consequently, occupationally-specific information is not available for release by the Follow-Up System for nearly two years after a cohort exits an educational institution. The lags are compounded when doing longitudinal studies. While this portion of a longitudinal study is called "*the second wave*," the results are not available before the exit cohort turns three years old.

¹⁹ See the briefing materials for the Performance Measures and Evaluation Committee and related Committee and Council action items in the agenda books compiled by TCWEC staff for the Council's quarterly meetings during Program Year 1995-1996.

²⁰ Details about the ALMIS project design and progress reports will be posted to the Texas SOICC's homepage on the World Wide Web at

<http://www.capnet.state.texas.us/soicc>

²¹ Informed choice is integral to career decision-making and training program selection by students and workforce development participants under the concepts of Student Right-to-Know and accountability in education. It also will play an important part in the procurement of education and training services on the behalf of participants by local workforce development boards. It may be especially important in this regard because those boards probably will be given the authority in most states to certify entities as eligible training service providers. The certification process is likely to be driven by outcomes-based performance evaluations of prior services rendered by education and training providers.

²² Massachusetts, Connecticut, Maryland, Iowa, and Wisconsin. These states form the core of the CRS steering committee and will receive subgrants to fund a ½ time LMI specialist to serve as liaison to Texas in this project.

²³ Details about the CRS project design and progress reports also will be posted to the Texas SOICC's homepage on the World Wide Web at the address listed in footnote 20.

²⁴ The Texas SOICC responded in good faith to complaints by educators that the CIP-to-OES crosswalk did not capture education and employment practices that might be unique to Texas. Software was developed that allowed educators to access information in the crosswalk from the CIP side and to record their recommendations about the jobs they thought related to each instructional program. Under the CRS, the SOICC will develop the "*flip side*" of that

software. The new program will allow employers to access the crosswalk from the OES side and to record their recommendations about the training they prefer to see in job seekers applying for work at various occupations in their firm's staffing pattern. Solicitation of both educator and employer inputs on an annual basis is essential if the crosswalk tool is to be kept current and valid.

²⁵ Texas Education Agency, Texas Higher Education Coordinating Board, and the Texas Department of Commerce.

²⁶ The U.S. Departments of Labor and Education jointly funded skills standards research in 13 industries in collaboration with related industry-based professional and labor organizations. A National Skills Standards Board has been established by federal legislation. The Texas Legislature has authorized creation of a similar state board. In order to prepare Texas to enter the skills standards arena, the TCWEC has received briefings from Dr. Bob Sheets (Northern Illinois University) and Bob Glover (LBJ School) on national and international research on the subject.

²⁷ As opposed to "*talking past one another*" with employers speaking their own dialect of occupational duties and tasks and educators speaking their own dialect of programs, classes, and essential elements. Until employers communicate their needs and expectations in a common language shared by educators, educators say that they cannot be faulted for failing to prepare their students adequately for the world of work. In the absence of "*product specifications*" from employers, educators are left as best they can to teach students what they know, not what the students need to know.

²⁸ The V-TECs is the repository and clearinghouse for the exchange of information about occupational duties, tasks, and competencies derived from a standardized and rigorous methodology and organized in a common format agreed upon by a consortium of member states. Members states have found information supplied by the V-TECS extremely useful in driving the revisions necessary to keep the curriculum responsive to employers' needs and expectations.

²⁹ Residual titles are those which: a) are not listed in the current version of the OES; b) cannot be assigned an OES code through a crosswalk to other occupational coding systems such as the Dictionary of Occupational Titles (DOT) or Standard Occupational Classification (SOC); or c) are not misspellings or grammatical permutations of existing OES, DOT or SOC titles (e.g., as "med. lab. tech." would be a permutation of "medical laboratory technician.")

³⁰ Details about the Emerging and Evolving Occupations research design and progress reports also will be posted to the Texas SOICC's homepage on the World Wide Web at the address listed in footnote 20.